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Railway Age

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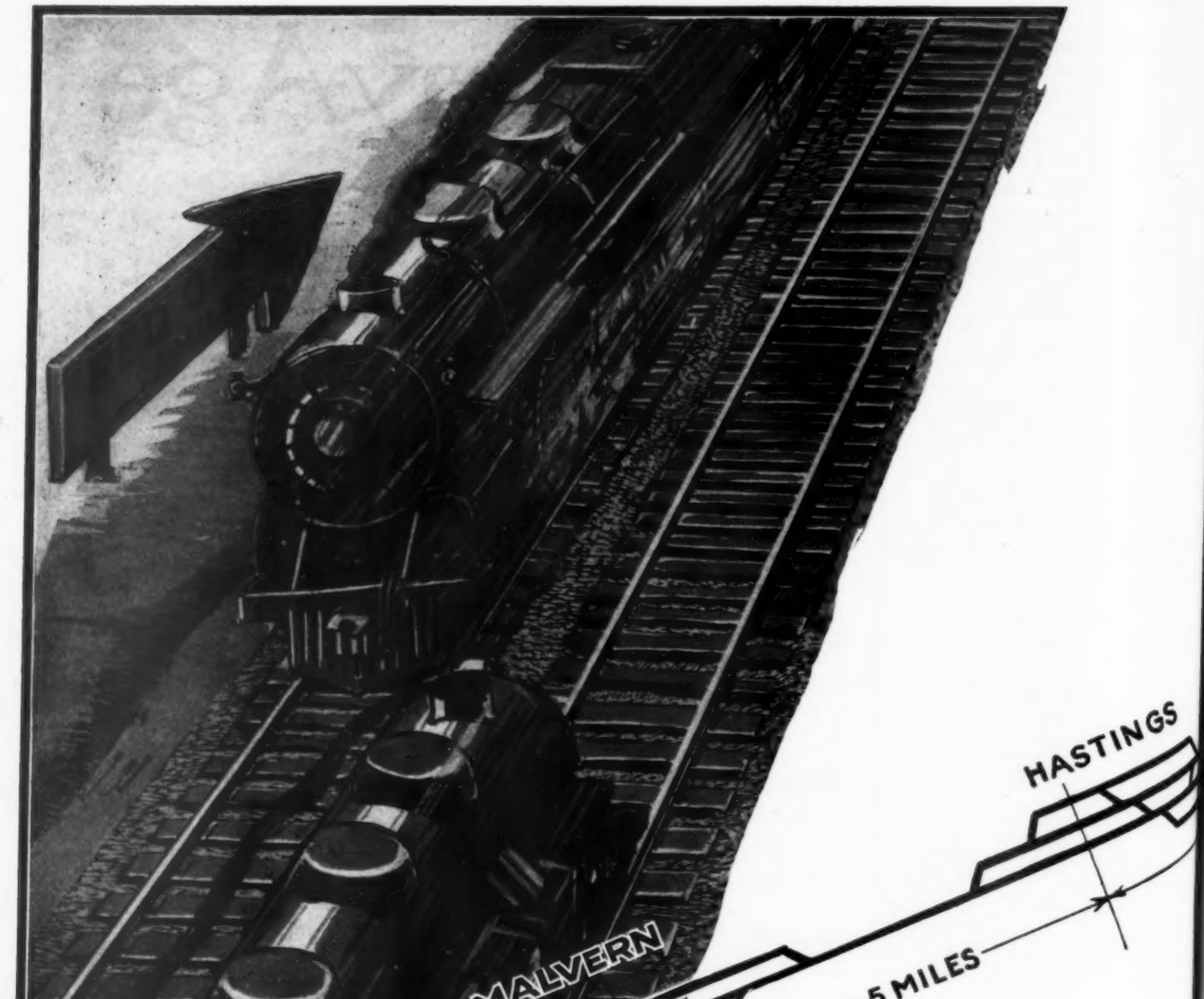

The twenty-five miles between Red Oak and Balfour is the only stretch of single track on the C. B. & Q. R. R. between Omaha and Chicago. Over this is handled a heavy passenger traffic and heavy seasonal tonnage from the agricultural districts. Considerable congestion resulted and double tracking appeared necessary.

To prevent the necessity of double tracking "Union" Dispatcher Control is being installed. An operator at Red Oak will control traffic over the entire distance from Balfour. Traffic congestion will be relieved and double tracking indefinitely postponed. The dispatcher is informed of the location of each train by the automatic train graph and closer meets can be arranged.

Railway Age

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Santa Claus in Government

PROBABLY the most serious menace to the economic welfare of the American people is what has been picturesquely called the "Santa Claus theory of government." This theory is that the government should make large expenditures for the benefit of different territories and classes of people, because, when the government makes expenditures, they do not cost anybody anything. Many business men are disposed to attribute to politicians, farmers and working men the belief that the government can be made to serve as an economic Santa Claus, and to criticize them for their credulity. Business men as a class seem, however, to believe in Santa Claus as strongly as any other class. The Santa Claus theory of government is of especial concern to the railways.

The student of economics is likely to assume that it will be plain to everybody that in measuring the cost of transportation consideration should be given not only to the passenger or freight rates that are paid for the service, but also to any taxes that are paid by the public to make the rendering of the service possible. Nevertheless, we constantly hear and read discussions of the costs of transportation by rail, by water and highway in which comparisons are made exclusively between the rates charged by the different carriers. For example, in an address a few days ago Secretary of War Good said, "Before the war the cheapest ton rate from New York to San Francisco was $19.04. Now it is $16.80, or a reduction of $2.24. Before the war the cheapest ton rate from Chicago to San Francisco, a route on which no water transportation is available, was $26.10. Now it is $29.46, an increase of $3.36. This tremendous increase in freight rates from the midcontinent is a heavy tax on industry, commerce and agriculture. That burden can only be lifted by the utilization of our inland rivers and lakes for transportation purposes." Not a word was said by Secretary Good regarding what it has cost and is still costing the public in taxes to make possible the reduction in freight rates via the Panama canal between the Atlantic and Pacific coasts nor about what it will cost the public in taxes to secure the reduction in freight rates which he assumes will result from the vast expenditures required to develop the huge system of inland waterways which he advocates.

As we have previously pointed out, General Ashburn, chairman of the Inland Waterways Corporation, argues at length in his last annual report to show that because the Inland Waterways Corporation has no bonds outstanding there is no reason why it should set forth in its annual reports the amount of interest that is being paid upon the investment in its facilities. That interest upon the investment not only in the facilities of the corporation but also on all the money that has been expended in the improvement of the Mississippi river and its tributaries, actually is being paid by the American public is unquestionable, but, pursuant to the Santa Claus theory of the government, this fact is ignored, with the result that the public pays, and pays, and pays, and at the same time enjoys the agreeable sensation of believing that it is getting something for nothing. No child ever raised a question as to whether Santa Claus had to pay for all the presents he distributed, and, if so, where he got the money. Likewise, no person who believes in the Santa Claus theory of government ever raises a question as to the actual cost of the public improvements made by the government or as to where it gets the money.

"Writing Down" Government Investments

Those who believe in the Santa Claus theory of government not only choose to ignore the interest paid by the tax payers upon investments made by the government, but also enjoy deluding themselves by having investments made by the government written down so as, by accounting hocus-pocus, to make as small as practicable the amount of interest they ignore. What has the Panama canal cost, and what is the annual interest upon the investment in it? It should be practicable to consult official records and answer this question with complete accuracy but it is not. Why? Because its cost has been "written down". In 1921 the Secretary of War issued instructions that "a careful study should be made of the cost of the canal, in order to establish, if possible, a capitalization to determine a fair commercial value that should be fixed for the canal and its various allied activities. When this has been arrived at, the actual cost of the canal and its activities be written down to this figure, which should thereafter be used in the operation and official reports as capital account upon which returns and expenditures should be justi-

fied." The "written down" value was fixed at $275,000,000. On this basis it is claimed that the canal is now earning 7 to 8 per cent on the government's investment in it. The fact appears to be, however, that at the end of 1926 the cost of the canal, including construction and unearned interest upon the investment, had been $478,000,000. The present governor of the Panama canal zone, Colonel Harry Burgess, apparently does not believe in Santa Claus. He recently presented to the house committee on appropriations an estimate that at the end of 1928 the canal actually had cost the government—that is to say the tax paying American public—$540,500,000. "On the actual debt owing to the treasury", he said, "we are earning only a trifle more than 3 per cent." But while Governor Burgess does not believe in Santa Claus, this is not true of certain manufacturers and other business men on the Atlantic seaboard. They believe it is possible to reduce an investment and the interest upon it by the simple device of "writing down" the investment, "and they are asking that tolls through the Panama canal be reduced because 7 per cent is being earned on the "written down" investment.

General Ashburn, chairman of the Inland Waterways Corporation, said in testimony before a congressional committee a year ago that the government's investment in the Mississippi-Warrior barge line was $24,000,000 to $25,000,000, but in the reports of the Inland Waterways Corporation it is given as about $17,000,000. The governmental Santa Claus is useful to the Inland Waterways Corporation in many ways. Among other things, he makes it possible to treat capital that has been lost as if it never existed.

Santa Claus and the Erie Canal

One of the best examples of the Santa Claus theory in practice is afforded by the Erie canal. It is, we believe, the only inland waterway in the country as to which the contribution toward the cost of transportation made by Santa Claus, as well as the contribution made in the form of freight rates, is definitely known. The average rate per mile on the Erie canal is about one-half cent, but the average interest and maintenance charges per ton mile paid by the public in taxes are about 2½ cents. In other words, Santa Claus pays about five times as much of the cost of transportation on the canal as is paid in freight rates.

The most curious feature of the present situation is that we see the Santa Claus theory of government being applied on a wholesale scale at a time when the thought and activities of the nation are dominated by men who profess utterly to disbelieve in it. Do our real leaders in business and in public life believe that the government should engage in competition with private enterprise? Far from it. Do they believe that public utilities should be owned by the government and operated at a loss to enable the people to get their service at less than cost at the expense of the tax payers? They certainly do not. Do they believe that the government should develop inland waterways, operate a barge line on the Mississippi river and disregard the costs thereby imposed upon the tax paying public for the purpose of causing freight to be carried at rates less than the total cost of transporting it? Well, of course, that's different. Business men do not believe in the Santa Claus theory of government—excepting when they expect Santa Claus to present them with something at the cost of somebody else.

Is this indictment of business men too severe? Has any organization of business men on the Atlantic seaboard arisen to insist that Panama canal tolls shall be kept high enough to enable the government to earn a reasonable return upon its total investment in the canal? Has any organization of business men in the Mississippi valley adopted a resolution advocating a governmental policy in the improvement of inland waterways and in the operation of the barge line under which no burden shall be imposed upon the tax payers to enable freight to be carried at less than the total cost of transportation?

From the standpoint of the railways the Santa Claus theory of government is dangerous because, first, it results in constant increases in railway taxes, and, secondly, in the subsidization of competition with the railways. From the standpoint of the public it is bad, because it is largely responsible for the constant increase in the taxes paid by the American people. Total taxes in this country increased from $9,000,000,000 to over $11,000,000,000 between 1923 and 1928, or more than 23 per cent. As long as business men profess to be opposed to making a Santa Claus of government, and then, when they think it is to their selfish interest to do so, raise louder "whoopee" than anybody else for Santa Claus policies, it will be absurdly inconsistent for them to condemn radicals and socialists for believing in the Santa Claus theory of government.

Gross Ton-Mile Education

THE value of gross ton-miles per train-hour as an index of the efficiency of operation is widely recognized by railway executive officers. But what of the subordinate officers, such as dispatchers, enginehouse foremen and road foremen of locomotives? How many of these men, who, in the final analysis, are largely responsible for ton-mile per train-hour performance, know what it is all about? Certainly they should know, but actual experience has shown that many of them do not. How, then, may they be expected to take an interest in something about which they know nothing? The answer is simple; they will take no interest.

The reasons for setting up gross ton-miles per train-hour as a measure of efficiency should be made known to the subordinate officers responsible for ton-mile production. They should be reminded of the fact that the average train load in freight service, among other factors, was used by railways for many years to measure efficiency and that the factor of time, until about ten

years ago, was not as closely associated with the actual, physical, productive performance of trains as it has since become. They should likewise be shown that more recently the increased rates of pay and higher prices of materials brought about largely by war conditions, have made it necessary to exercise much closer supervision to keep operating expenses within reason and that the element of time has become increasingly important.

In using "gross ton-mile per train-hour" as an index, these men should understand that it is the product of the gross train load, excluding the weight of the locomotive and tender but including the weight of the cars themselves as well as their lading, multiplied by the speed of the trains, the speed being measured by the elapsed time between the initial and final terminals. In transmitting this information to subordinate operating officers, it is well to supplement it with a simple illustration for a typical division and a typical train. To most railway officers these explanations may appear elementary, but to many subordinate officers they represent mysterious figures with which clerks amuse themselves and which have no particular application. A few words of explanation at meetings with these men will go a long way towards clarifying their understanding and securing the support of the actual producers.

Fair Dealing in Revising Interline Freight Settlements

W. S. HARRISON, general auditor of revenue of the Canadian National, at the convention of the Railway Accounting Officers in Cleveland, made a plea for co-operation between railroads in revising interline freight settlements. When statements of differences were made up, he said, the railroads making them should honestly record not only differences in their own favor but also those in favor of other lines. By such straightforward dealing, he pointed out, correct settlements would be expedited and all the railroads would benefit.

Mr. Harrison's address provoked animated discussion, and it was suggested that possibly statements of difference carrying nothing but credits to the carrier preparing them were the logical outcome of employing outside audit bureaus which were paid on the basis of a percentage of the net proceeds of such statements of difference. Naturally, if many debits to the account of the railroad issuing the statements were found, the net difference, and hence the audit bureau's compensation, would be less. It was also pointed out that an audit bureau, while not entering items to the credit of other carriers on the statements of difference, was in a position, if it wished, to prepare a list of such items and approach these other carriers offering to collect specific sums—at the customary compensation—from its first client. The outside organization might also, it was said, utilize its access to its railroad client's records to detect overcharges, for which information shippers might be induced to pay a fee. Where settlements are made without outside aid, the sums involved remain within the railroad industry.

A co-operative spirit among railroads—accounting departments helping each other to correct errors regardless of what railroad benefits thereby—should assure final settlements fully as correct as any which outside organizations could provide. A dog-eat-dog policy can benefit even those who first start it for only a limited time, and in the end they must suffer along with the entire industry.

Train Telephone Service

TELEPHONE service on a moving train has been provided experimentally by the Canadian National Railway. The experiments have proved that the apparatus as now developed on the railroad will render satisfactory service in nearly all kinds of weather; further improvements will follow with refinement of the apparatus. Such telephone service is particularly well suited to Canadian National requirements and can be adapted to C. N. R. lines without increase of man-power.

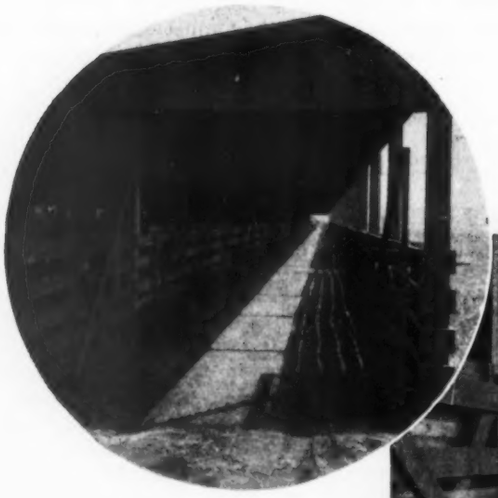
The equipment requirements consist of a sending and receiving set on the train and other sets along the right-of-way at intervals of 200 or 300 miles, the latter being placed in existing telegraph and telephone booster stations. Additional wire lines along the right-of-way are required only where railroad telegraph and telephone lines are now in cable or remote from the right-of-way. The cost of the apparatus has not been determined, but it should not be difficult to absorb, if the service proves popular. The installation is practically without precedent in this country, and there is, therefore, little to indicate how much use may be made of it.

A number of years ago an inductive type of telegraph installed on trains by the Delaware, Lackawanna & Western provided a service which did not prove to be popular, but communication requirements of that time were not comparable with those of today. When transatlantic radio telephone service was first installed, there were many who wondered if it would be used as anything but a novelty. Now the single lane available is in service 24 hours a day, and several more lanes are being planned. Train telephone service will be installed on the Canadian National from Toronto to Montreal, and plans have been made for extending it to Chicago. The installation will demonstrate the usefulness of such a service, and much credit is due to those who have made such a trial possible.

Motor Coaches Recoup Train Revenue Losses

THE New Zealand Government Railways, during the eleven months period from April 1, 1928, to March 2, 1929, carried 347,694 less passengers and earned £80,956 ($394,256) less in passenger revenues than in the corresponding period ending March 2, 1928. Despite these declines, however, the total passenger earnings decreased only £14,077 ($68,554) because the motor coach services of the railways carried 1,962,756 more passengers and earned £66,879 ($325,700) more in gross revenue than in the preceding period. Thus the utilization of the motor coach enabled the administration to recoup approximately $325,700, or 83 per cent of a potential passenger revenue loss of $394,256. The case provides further evidence of the possibilities for revenue protection which an economic co-ordination of rail and highway services offer.

Erie Builds Large Mo Station at Eas



New facilities, which have been provided solely for feeding and resting stock in transit, incorporate many special features

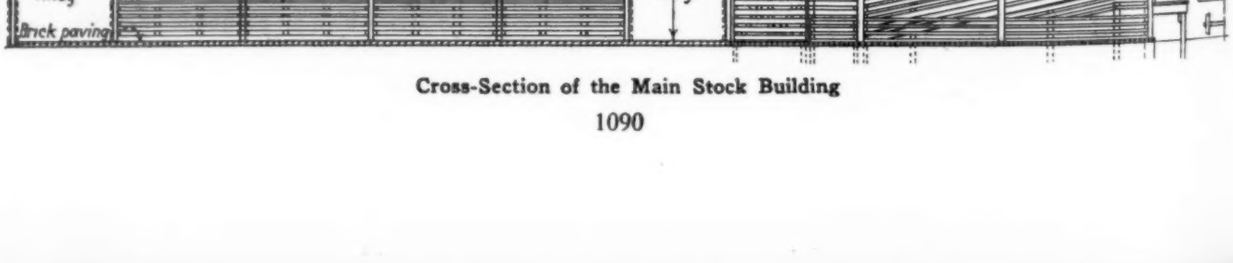
Alleys of Ample Width Were Provided

IN ORDER to attract to its lines eastbound livestock business from the central west via its Niagara frontier connections, and furthermore, to make it possible to handle this class of business in the most expeditious manner, the Erie has recently established a stock "feeding-in-transit" station on its lines at East Buffalo, which is not only one of the largest stations of its kind in the country, but also one of the most modern. The facilities at the new station, which are capable of handling over 100 cars of stock a day, consist essentially of a large building with 50 pens and 14 two-level stock unloading chutes, a hay and straw barn, a corn barn, a sand house, a horse barn and wagon shed, and an office building. These facilities, which also include a hog drencher and a car trough watering platform, are served by over a mile of new tracks, including three 28-car tracks in front of the loading and unloading chutes, a 660-ft. supply track extending along the rear of and serving the hay barn, corn barn and sand house, and several crossovers between the main stock tracks for expediting the shifting ot cars.

The new facilities are located parallel with Babcock street and just south of Williams street in East Buffalo, on a large tract of land which for years has been under water to an average depth of about two feet. The accumulation of this water was due entirely to a lack of surface drainage, and therefore, in order to utilize the site it was necessary for the Erie to install about 1,000 ft. of sewers and subsurface drains. This was done, and as a result, a highly suitable area of about 10 acres was made available for the feeding station.

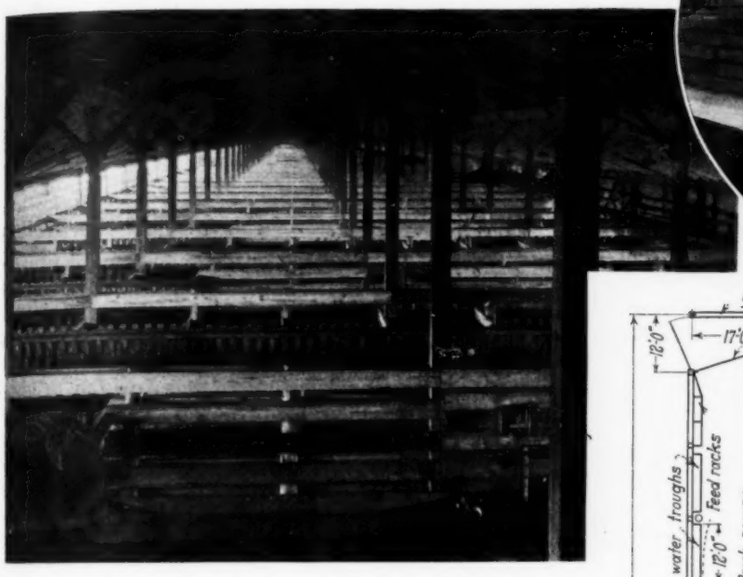
Adequate Fire Protection

The various buildings at the station lie in a general north and south direction, the office and feed barns being located in line with each other at the south end of the main stock yard building. All of the buildings are of frame construction, in view of which adequate fire protection was provided through the construction of a fire road along the rear of the plant, which gives access to four newly-installed four-inch fire hydrants. This fire road, which is constructed of cinders, is 16 ft. wide, and extends from Williams street, a distance of 1,760 ft. to the most southerly building of the station, providing access to all of the buildings for the equipment of the city fire department. Supplementing this precaution against a serious fire, the large stock yard building is provided with six 2½-in. standpipes, each of which is



Cross-Section of the Main Stock Building

Modern Livestock East Buffalo



Looking Over 37 Pens in the Main Bay of the Livestock Building—In the Circle—The Six-Inch Hog Drencher

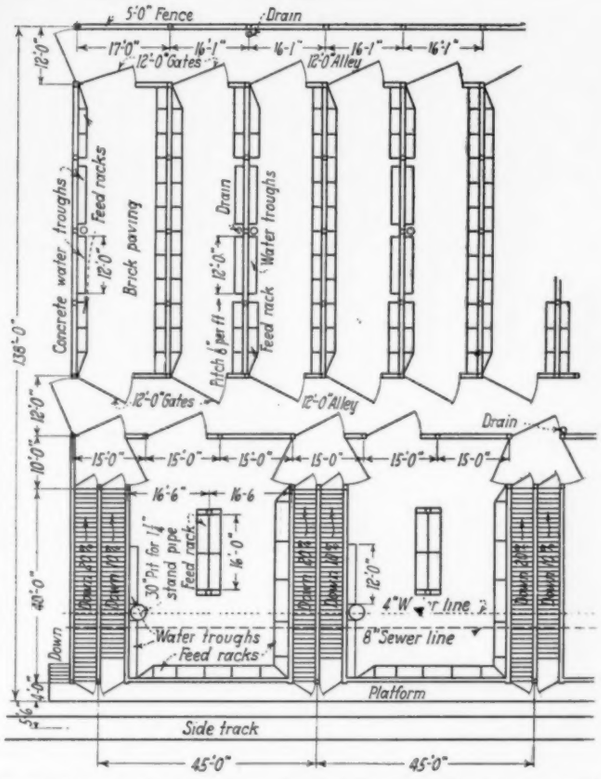
equipped with a self-draining valve and a reel containing 100 ft. of 2½-in hose.

Track service at the station is provided by a lead at the south end of the layout, which branches out into three parallel 28-car tracks. The most easterly of these tracks serves the 14 unloading chutes of the station and is known as the unloading track, while the other two are auxiliary tracks for holding empty stock cars and cars of hogs during feeding and resting periods. The supply track at the station, which also leads off from the south end of the layout, is used entirely for the delivery of feed and bedding direct to the various barns at the station.

New Facilities Provide for Expeditious Stock Handling

As indicated by its name, the Erie's new station is not intended for the holding and marketing of stock, and therefore it cannot be compared in size with stations where this is done, it being the function of this station only to provide a feeding and resting point for stock in transit, in compliance with the federal law. In designing and laying out the new facilities at East Buffalo, several objectives were kept foremost in mind. Among these were the arrangement of unloading chutes to accommodate 40-ft. cars and permit unloading from both decks of double-deck cars at the same time; an arrangement of gates and pens which would preclude long drives to and from cars; and the equipping of pens so that they could be used interchangeably for feeding cattle, sheep and hogs. All of these features have been incorporated in the new layout, as will be noted from the following description of the facilities.

The large stock building at the station, housing the feeding pens and unloading chutes, is a frame structure



Part Plan of the Main Stock Building Showing Layout of Feeding and Watering Facilities

597 ft. long by 134 ft. wide. This building, which is in reality a shed with solid board ends, has a frame roof covered with Flintkote roll roofing, and supported by heavy timber columns set on concrete footings. The roof consists of a large monitor-top section, 60 ft. wide by 598 ft. long, flanked on each side throughout its length by a low, single-pitched wing roof, which slopes inward toward the main roof and affords protection to a 12-ft. alleyway beneath. Joined with the low roof on the track side of the building is another large roof section which covers an area of 50 ft. by 598 ft. This latter section, which is of the lean-to type, has its high point toward the center of the building and slopes toward the loading and unloading track. This section of the roof was completed only recently when it was decided to put all of the pens under cover, and the particular type of roof construction was adopted so as to

provide a vertical face in which sash could be installed to afford better daylighting for the large building interior.

The area directly beneath the monitor-top section of the roof is occupied by stock pens, there being 37 such pens, each 60 ft. long by 16 ft. 1 in. wide, arranged side by side, crosswise of the building. Each end of each of these pens is equipped with a 12-ft single-swinging gate, which opens into a 12-ft. alley. The alleyway along the rear end of the pens is used primarily for delivering feed and bedding to the pens, while the one provided along the track end of the pens is used primarily as a stock run, and in connection with the cleaning of the pens. As both of these alleyways have been made 12 ft. wide, the 12-ft. gates to the various pens, when fully opened, completely shut them off into sections of any desired length. Thus, opening the gate of any particular pen provides access to the pen for stock, and at the same time provides a barrier in the alleyway immediately beyond the opening.

The large lean-to section of the roof structure completely covers all of the stock-unloading chutes at the station, and also the pens which are located intermediate between them. Throughout the length of this section there are 14 chutes, spaced 45 ft. center to center so that they will accommodate a continuous train of 40-ft. stock cars.

In planning the number and arrangement of the chutes, some consideration was given to providing 15 chutes, placed at intervals sufficient to permit the spotting of 35-ft. cars consecutively, but this plan was dropped, since the spotting of a 40-ft. car at one of the chutes would interfere with the use of the chutes on either side of it. In view of this, it was thought better to reduce the number of chutes by one, and make it possible to spot 40-ft. cars consecutively at 14 chutes. As a result, 14 chutes were provided, and their track ends were joined together by a four-foot platform, parallel with, and 5½ ft. from the center of the unloading track. Between each pair of chutes, the pen space afforded is approximately 33 ft. by 50 ft.

A Portion of the Erie's New Facilities on the Unloading Side Just Before the Chutes Were Inclosed

Chutes Are of Two-Level Construction

The unloading chutes at the station are of permanent type, 12 ft. wide by 40 ft. long, and are of two-level construction so as to permit the loading and unloading of double-deck cars, and either one or both decks at the same time. In providing the two-level feature, each chute consists of two independent ramps, 6 ft. wide; a low ramp on a 10 per cent grade to car floor height, and a high ramp on a 20 per cent grade to the upper deck level of double deck cars. Both of these ramps are constructed with three-inch oak flooring, which is provided with footing cleats of one-inch by one-inch and one-inch by two-inch oak strips alternated about eight inches apart. The lower ramp is in practically direct contact with the lower decks of cars over the track platform which joins the chutes together, while a five-foot portable bridge section is necessary to connect the higher ramp with the higher decks of cars. These short bridge sections are moved into position by hand, and are slid back in the clear on to the higher ramps when not in use.

The moving of these bridges is practically the only instance in the handling of stock at the feeding station were it is necessary to lift runways or gates into position. This has been made possible largely through the effective arrangement of swinging gates provided, which are of such length and so arranged in many instances as to have the complementary functions of closing off one route while they provide access to another route desired at the time. The accompanying drawing shows the functions of the various gates provided and the manner in which they can be operated to provide direct inclosed routes to or from any of the pens of the layout.

Combination Pens Increase the Capacity of the Station

In planning the facilities in the main building, each pen was equipped to make it suitable for both large and small stock, thereby precluding the necessity of assigning various classes of stock to particular pens, which would not only limit the capacity of the station, but would necessitate the spotting of cars or the driving of the stock for considerable distances. In the arrangement provided, each pen can be used interchangeably for cattle, sheep or hogs, no spotting of cars is necessary, and the maximum drive to or from a car does not exceed 80 ft. except in unusual instances. Shortening the length of drive not only speeds loading and unloading generally but also facilitates the handling of crippled or lame livestock.

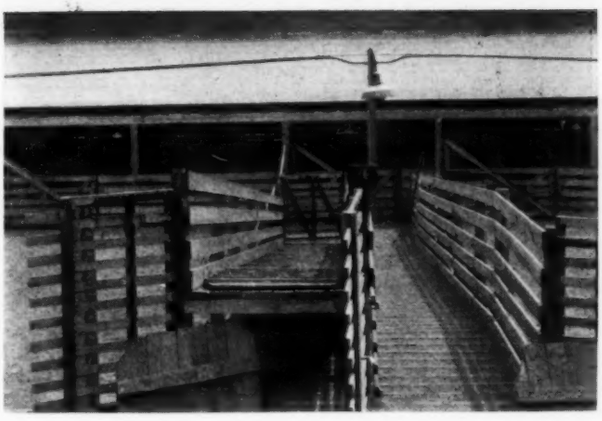
Within the main section of the building, each pen is equipped with about 85 ft. of high feed racks for cattle, a similar length of low feed troughs for hogs and other small stock, and 24 ft. of low, concrete water troughs, all of which are of approved design. In arranging these facilities, one whole side of each pen is fitted with a continuous feed rack and trough, while the opposite side is equipped with two 12-ft. water troughs near the center, and with combination feed racks and troughs toward each end. The water troughs, which were manufactured by the Massey Concrete Products Company, are spaced about two feet apart, and within this space there is a 1¼-in. flexible standpipe which can deliver water to both troughs.

In order to prevent freezing of the water in the standpipes, they are equipped with self-draining valves set in concrete wells. 30 in. in diameter by 4 ft. deep. By arranging the water troughs in adjacent pairs of pens back to back along the partition separating the pens, only one valve and drain well is required for each two standpipes, and a minimum amount of work was necessary in connecting the overflows from the water troughs to the main drainage line which extends continuously through the center of the building. The 13 large pens between the unloading chutes are likewise equipped with concrete water troughs and with combination feeding racks so that they can be used interchangeably for various classes of stock.

The only weighing operations at the station are in con-

nection with imported Canadian stock, which is required to be weighed by customs inspectors upon arrival. This weighing is done on a new stock scale with a platform 14 ft. by 30 ft., and with a capacity of 40,000 lb., which is located in the alleyway along the rear of the pens in the main shed.

Throughout the entire stock building the pens and driveways are paved with a hard-burned vitrified paving brick, laid on a sand cushion and a six-inch cinder base. Sand alone is used for a filler between the bricks in the pens, but a cement grout filler was used in constructing the driveways since they are used by the horse and wagon in delivering feed and in cleaning the pens. Throughout, the floor area is pitched in various directions, providing run-off to the catch basins installed in the drainage system.



Looking Down Over One of the Two-Level Unloading Chutes Before it was Inclosed

Lighting of the large stock building for night operation is by means of an unusually effective electric lighting system. This consists primarily of longitudinal rows of 100-watt electric lights suspended from the roof structure, each of the lights being equipped with a shallow bowl metal reflector.

The Auxiliary Buildings Are Adequate and Well Laid Out

The buildings at the Erie's stock feeding and resting station which are auxiliary to the main building already described, include the hay barn, the sand house, the corn barn, the horse barn and wagon shed, and the small office building. These various facilities are located in line with each other south of the resting and feeding pens, and between the unloading track and the station supply track.

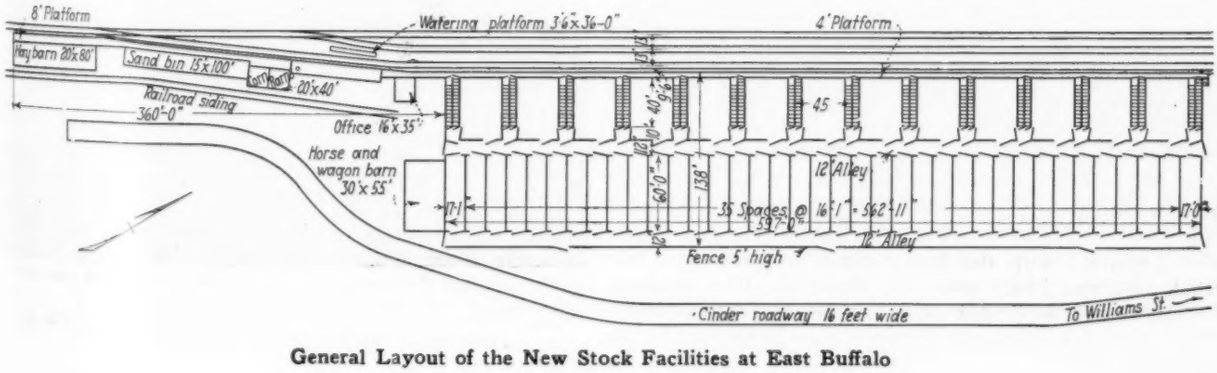
The hay barn is a frame structure, two stories high, with a monitor-top roof and novelty siding. This building, which has capacity for 150 tons of baled hay and straw, is 80 ft. long by 20 ft. wide, and is equipped with an eight-foot plank platform throughout its length on the unloading track side. Two large doorways in the rear of the building are used for receiving hay and straw from cars spotted on the supply track, while two similar doors in the front of the building are used primarily for loading out the hay and straw for delivery to the stock pens.

The sand house at the station, which is used solely for the storage of sand for car or pen bedding for hogs, is a substantial frame structure, 100 ft. long by 15 ft. wide, located just north of the hay barn. This building has a solid concrete wall foundation, which is filled with cinders up to the level of the frame platform which extends along the unloading track side. The capacity of the house is approximately 12 cars. All of the sand is received at the house over the supply track at the rear, and is shoveled to the bins through openings in the roof. Delivery of the sand on the platform side of the house is made through a number of openings provided with vertical sliding gates. From beneath these gates the sand flows out on to the platform from which it is shoveled into the cars that are to receive new bedding.

The corn barn lies immediately north of the sand house, and like the other auxiliary buildings, fronts on the unloading track. This unit, which is a frame structure 40 ft. by 20 ft., with a capacity of 3,000 bushels, is likewise served by a platform, continuous with the platforms serving the hay barn and the sand house. The corn barn is used solely for housing a supply of corn for feeding hogs in transit, the corn being shoveled into the cars as they are moved slowly by the bin openings.

Directly opposite the corn barn, and between the two tracks at that point, is a 3½-ft. by 36-ft, frame watering platform, which is equipped with a two-inch water line and two hydrants for filling the water troughs of cars as they pass. Two similar hydrants are located on the platform in front of the corn barn, so that four streams of water can be directed into the car troughs at one time.

Just beyond these hydrants, on a continuation of the corn barn platform, is a six-inch hog drencher which is equipped with two spraying nozzles. These nozzles, which deliver a heavy flat spray, are located one above the other, and are fitted with special flexible joints so that they can drench hogs equally well on both decks of double-deck cars. The drencher is hand-operated, and is capable of delivering an adequate amount of water to cars while they are in motion. From the above description of the auxiliary facilities at the station, it will be noted that in handling hogs, the operations of providing bedding, feeding, watering and drenching are practically continuous as the cars are pushed by on the un-



General Layout of the New Stock Facilities at East Buffalo

loading track, and then shunted over a crossover to one of the holding tracks.

The two other auxiliary structures at the station are the horse and wagon barn, and the office building, both of which are of frame construction, the former being 55ft. by 30 ft., and the latter, 35 ft. long by 16 ft. wide. The horse and wagon barn is an ordinary shed type structure used primarily for housing the horses and the wagons and other equipment used in carrying out the work at the feeding station.

One of the 37 Smaller Pens Ready for Incoming Stock

On the other hand, the office building is a well-built and equipped structure, with ample office space, and with wash, toilet, and locker facilities for the station employees. This building is heated by a hot water heating plant, and like all of the other buildings at the station, is provided with electric lights.

The stock handled at the Erie's new feeding and resting station is all moving eastbound from Chicago, St. Louis, Omaha, St. Paul, Detroit, Cleveland and other central western points and is held over at the station either because the "in transit" time limit is about up, or in order to prepare the stock for the long ride to the eastern markets. Under present operating conditions, a large part of the stock is received at the station between 6 p. m. and midnight, and is moved on its way early the following morning.

In handling a trainload of stock at the station, the cars containing cattle and sheep are spotted in front of the unloading chutes, while the cars containing hogs are set out on one of the holding tracks. Gates are arranged and unloading then begins, it requiring only from one to five minutes to unload each car and to close the stock in a pen. In most instances this is done in from one to two minutes, a longer time being required only when handling sheep and calves. As soon as the cars are unloaded, they are pulled out to make room for other cars until all of the stock received has been unloaded.

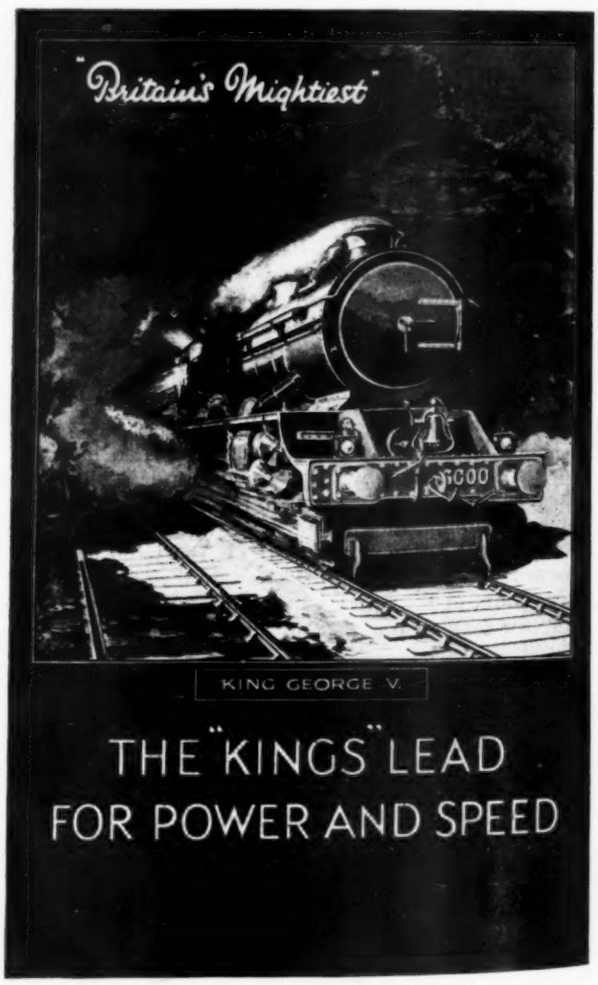
Only Seven Men Employed

When this work has been completed, attention is given to the hogs which have been received, the hog cars being pulled back over the south end of the unloading track where the sand bedding of the cars is replenished if necessary, and where the hogs are fed and watered, and then drenched if conditions require. Operating in this manner a total force of seven men carries out the work at the station, handling an average of from 40 to 50 cars daily at the present time. This force is divided into a day and night shift, certain of the men handling the stock, while the remaining men clean the pens and distribute the feed for incoming stock later on. Ordinarily, flushing of the pens is not necessary, but this can be done when required by means of the fire hydrants and hose provided at intervals throughout the main building. Disinfecting of the pens is done when necessary with light portable spraying equipment carried about by the men.

As a counterpart to its new stock facilities, the Erie is operating a special stock train out of East Buffalo to New York each day. This train, which was put in service the day following the opening of the feeding station, leaves East Buffalo at 6:30 each morning, and maintains a schedule of about 20 hours to New York. On the average, the train consists of from 75 to 100 cars, which includes such fill-out cars as may be added at Buffalo.

The new facilities at East Buffalo, which are operated under agreement by Swift & Company, were planned and constructed under the general direction of R. S. Parsons, chief engineer of the Erie, until his death on May 18, 1928, the buildings being designed by Graham King, architect of the Erie. The actual construction of the facilities was carried out under the direct supervision of C. H. Splitstone, superintendent of construction, who was represented on the ground by A. Cook, resident engineer. The contractor handling the work was the Newhall Company, Cleveland, Ohio.

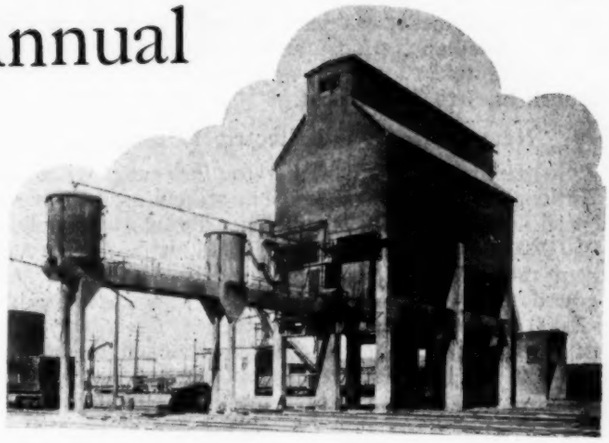
* * *



Reproduction of Great Western (of England) Poster in Color Featuring the Locomotive Which was on Display at the B. & O. Centennial Exposition in 1927

Fuel Men Hold Annual Meeting

Convention at Chicago gives renewed impetus to fuel saving



AS in the case of other recent meetings, the twenty-first annual convention of the International Railway Fuel Association, held at the Hotel Sherman, Chicago, May 7 to 10, inclusive, was featured by numerous able addresses, individual papers and committee reports which summarized the progress in railway fuel economy work and offered a real inspiration and incentive to further efforts along that line. Many of the important problems in connection with the inspection, preparation, distribution and use of railway fuel received consideration during the course of this convention, which annually brings together a large gathering of railway officers of all departments, and representatives of fuel and equipment supply companies.

The convention program was divided into several sections, covering technical operating, fuel handling and mechanical phases of the railway fuel problem. The opening session was addressed by Sir Henry Thornton, chairman and president, Canadian National; R. H. Aishton, president, American Railway Association, and H. L. Gandy, executive secretary, National Coal Association. Other addresses were made by J. B. Hill, president, Nashville, Chattanooga & St. Louis; T. W. Demarest, general superintendent of motive power, Pennsylvania; A. P. Prendergast, mechanical superintendent, Texas & Pacific, and L. K. Sillcox assistant to the president, New York Air Brake Company. Committee reports were presented on steam turbine locomotives; Diesel locomotives; front ends, grates and ash pans; oil- and coal-firing practice; fuel distribution and statistics; fuel bulletins; fuel stations; inspection and preparation of coal; coal- and oil-fired power plants, and new locomotive economy devices. Abstracts of some of the individual addresses and committee reports will be presented in this and subsequent issues of the *Railway Age*.

In opening the convention, President T. C. Hudson, assistant general superintendent of motive power of the Canadian National, called attention to the rapid growth of the association from a membership of 35 in 1908 to 1,400 active and associate members in 1929, this growth having been made possible largely by the hearty support extended to the association and its activities by railroad managements. He quoted statistics showing the steady reduction in unit fuel consumption per 1,000 gross ton-miles in recent years and said that the work of officers and members of the International Railway Fuel Association has been no inconsiderable factor in securing this result. He pledged the efforts of the association in securing still further economies.

Address by Sir Henry Thornton

In opening his address, Sir Henry Thornton, chairman of the Board, and president of the Canadian National, called attention to the remarkable progress in railroading, particularly during the past ten years, and said that he knew of no quarter of the globe in which so much progress has been made as on the American continent. He congratulated the association on its contribution to fuel economy, both from a scientific and practical standpoint, and said that the contacts, acquaintanceships and general dissemination of knowledge at its conventions are an important influence in promoting fuel saving as well as other operating economies.

In calling attention to recent specific developments of importance in the railroad world, Sir Henry mentioned experiments with Diesel-electric equipment on the Canadian National and two-way telephone communication with crews on moving trains. He traced the historical background of the steam locomotive, explaining how the development of steam power as applied to the transportation problem marked a great epoch in the progress of civilization. He said that the employment of steam for industrial purposes was the greatest development in the history of mankind, because it led to all other developments, including modern machinery and the automobile.

The continued search for cheaper power has resulted in notable progress being made in the case of hydro-electric power and power from internal combustion engines. When considering the vast supply of energy in the universe, however, Sir Henry said that a surprisingly small percentage is usefully employed, the energy of the sun's rays and of the tides, for example, vastly exceeding all other forms of energy, but being used practically not at all. The future development of mankind will depend on the degree to which he harnesses and turns to useful purposes this vast store of energy. Sir Henry expressed the opinion that while other forms of energy may be developed and utilized as conditions warrant, "Old King Cole will still be doing business at the same old stand."

Sir Henry said that steam power as applied to rail transportation is now confronted with two challenges. the first being that of electrical equipment and operation. He referred to the popular fallacy that electrical operation necessarily implies increased efficiency and economy and said that only under certain favorable conditions will actual savings be realized. The second challenge, according to Sir Henry, is offered by Diesel-electric locomotives, now being used on the Canadian National as well as on other roads. He said that a few years ago the Canadian National felt that developments of Diesel-electric equipment offered a fruitful field for study.

Steam operation on branch lines became costly, the operating ratio in some cases being 110 per cent. After

examining developments in the European field, Diesel-electric equipment was selected and placed in service on the Canadian National, and has been effective in reducing the operating ratio on some of the non-paying branch lines to 75 per cent.

New C. N. R. Oil-Electric Locomotives

Sir Henry referred briefly to the new Canadian National oil-electric locomotive at present used for high-speed passenger service. The locomotive weighs 650,000 pounds fully equipped, and, with the present gear ratio (22 to 69), is designed to develop 100,000 pound tractive force during accelerating periods and 42,000 pound continuously, with a freight gear ratio of 18 to 73. The locomotive is designed to develop 130,000 pound tractive force during accelerating periods, with momentary tractive forces limited by adhesion. This locomotive consists of two units, each of which is powered with a twelve-cylinder Beardmore oil engine of the solid-injection type, the nominal rating of each engine being 1,330 hp. at 800 r.p.m.

Some highly pertinent comments regarding Diesel-electric equipment for switching service were also made by Sir Henry, who said that experience of the Canadian National with equipment of this type shows a fuel economy of 50 per cent as compared with steam locomotives of similar power This saving is largely due to the elimination of stand-by losses, unadvoidable whenever steam locomotives are employed in intermittent service. Sir Henry stated emphatically that Diesel-electric locomotives also present an answer to the smoke problem and that when this equipment is properly designed and operated no objectionable smoke conditions are encountered.

Address by R. H. Aishton

Referring to the campaign instituted by the railroads some years ago to save one pound of coal per 1,000 gross ton-miles, R. H. Aishton, president of the American Railway Association, said: "I have always had this confidence in railway men that, if you put up some concrete objective that they can understand and see, they will achieve it. That is what you did. In the first year you saved 12 lb. You weren't satisfied with that. The next year you saved 9 lb. more. In 1926 you saved 3 lb. more and, in 1927, 6 lb. more. Now, in 1928, the year you are just reviewing, according to your president's statement, you saved 4 lb. on top of that. Your president told you how many tons and how many dollars that was.

"I am all the time talking in millions and billions, but I can't conceive what they are. As I figure it out, what you actually did save was something like this: It amounted to about 38,000 carloads of coal, which would have made about 790 trains of 50 cars to the train. That gives you a picture of the result of your efforts."

Mr. Aishton referred to other important operating economies incidental to saving fuel. He also outlined some of the problems now facing the railroads in the way of water, highway and air competition, and said that part of the answer is for the railroads to take advantage of new methods of transportation wherever practicable.

"The big answer of the whole thing," he said, "is to take advantage of every known method of bringing about greater efficiency in the transportation with which you serve the public, because, after all, the public is going to decide what transportation it will use and that is going to depend on the service you give. Whether you can give better service with Diesel locomotives, or whether you can do it by utilizing white coal, or whether you can do it by burning the coal better or getting more efficient means of producing it, I don't know. That is your problem to find out. Always keep in front of you that the future of the railroads is assured. Coal is going to be king, regardless of the other things, as Sir Henry said. You have to depend on the railroads for the backbone of transportation. Your job is to keep that transportation constantly before you with an idea of getting it more and more efficient and more and more economical all the time."

In a striking way Mr. Aishton likened what has already been accomplished in fuel economy to the shaking of an apple tree loaded with ripe fruit and from which apples fall by the bushel on a slight shake. He said: "That is what you have been doing for the last few years. There are many apples still there, but you can't shake the tree any more. You have to go after the apples with a ladder and hook and pick them off. That is the job, Mr. President, that lies before your association."

Address by Harry L. Gandy

Harry L. Gandy, executive secretary, National Coal Association, speaking on the subject "Where Mine and Railroads Meet," emphasized the common problem of the railroad and mining industries with respect to government regulation, mergers and competition. He said that if the bituminous coal industry and the capital invested in its rail movement were represented by a stock company, the total stock issue would exceed several billion dollars and the railroads' interest would control over 70 per cent of this hypothetical company. The loss of markets to the bituminous industry in 1928, he said, through competition of other fuels and power, and also because of increased efficiency in combustion methods and equipment, is estimated at 188,000,000 net tons. This means a considerable loss of railroad revenue tonnage, he pointed out. Several railroads have assisted in this loss by converting their locomotives to oil burners.

Apparent Saving Becomes Loss

In discussing this Mr. Gandy said that he had been informed by a railroad officer that an apparent saving through conversion from coal to oil had been turned into a deficit when there was taken into consideration the lost revenue from the mines on the lines of the railroad which needed the supporting factor of railroad fuel orders. There was an additional loss in revenue freight from communities which had been paralyzed by loss of mine payrolls. The value, he said, of keeping the mines operating and well equipped from the standpoint of insuring fuel prices five years hence on a parity with present figures was important to the railway industries.

Mr. Gandy referred to the advertising campaign which was inaugurated a few months ago by the Norfolk & Western. Its advertisements, he pointed out, not only describe the excellence of the mine product, but also fittingly speak of "the adequate and efficient transportation, perfect car supply, rapid movement and prompt delivery." For years the coal salesman has been a zealous traffic solicitor, he said, and it is quite proper that both the railroads and the coal operators get together and work in close harmony for their mutual benefit as well as for that of the general public.

Proper Air Brake Maintenance Justified

By L. K. Sillcox
Assistant to President, New York Air Brake Company
Watertown, N. Y.

One word suffices to define the primary problem of transportation—*power*. Higher acceleration and higher deceleration and higher schedule speed are required to meet the public demand for railway performance. In the comparatively short space of one century it has become the custom to think of traveling at an ever increasing speed, and it cannot be said that any limit has been reached in that respect.

It cannot be too strongly emphasized that the problem of securing higher schedule speed covers everything that happens to a train between terminals. Approached with this idea, we need to consider four main sources which may lead to prompter movement of traffic: First, increasing the proportion of train-running time, at a maximum free running speed, and by making full use of such time; second, reducing the time spent at stops, and in slowing up and getting under way; third, installing modern equipment, and fourth, training all concerned to utilize, to the fullest extent safely possible, opportunities for increasing schedule speed. The attainment of higher speeds must be accompanied by corresponding development in deceleration. In order that trains may maintain higher speeds between stops, brakes must provide rapid deceleration. The increased hazards developed by faster speeds must needs be counteracted by superior braking. While there is no physical difficulty in the way of very high speeds, if demanded by the public, it should be realized that the greater the speed the greater must be the cost and risk involved.

It is not sufficient that the brakes in use stop trains satisfactorily, because it should be realized that anything that effects greater safety to the traveling public, gives greater protection to rolling stock and lading, and permits of increased schedule speeds, longer and heavier trains, and greater frequency of train service, thereby causing the equipment, the organization and the fixed property to be made available for greater service, represents an advance in value as a revenue increasing agency. If reasonable efficiency from the use of air brakes is to be realized, it is highly necessary to stress the fact that a requisite degree of skill on the part of road crews, to secure proper operation of the equipment, is constantly in demand and can only be obtained generally through proper supervision and cooperation.

High Brake Rigging Efficiency Desirable

When a shortening of the emergency stopping distance with modern equipment is contemplated, there are a number of factors involved which have to receive due consideration. One of the most important is what is termed foundation brake rigging efficiency. Deflection of brake rigging, lack of proper adjustment and lost motion throughout the car members tends to increase emergency piston travel to such an extent that full brake cylinder pressure cannot be reached, and, in some cases, a large percentage of the force possible from the brake cylinder, to be transmitted to the brake shoes, may be largely lost through inefficient brake-gear construction, adjustment and maintenance. It has constantly been the purpose to produce, with the brakes, a means for obtaining the highest average braking power possible that will not slide the wheels under average conditions.

As is well understood, when brake cylinders of insufficient size are applied to cars the total leverage will necessarily be large and the piston travel excessive. Since it is improper to reduce the available braking power, only one remedy remains, namely, that of applying larger brake cylinder areas to the cars. When a car is under-cylindered, the piston travel is too great, the shoe clearance is insufficient, much of the required braking power is lost, too much time is consumed in making a service application of the brakes, thus creating a temptation to use the emergency brake, and consequently causing excessive wastage of the air supply in controlling the speed of the train or bringing it to a stop. If an attempt is made to shorten the piston travel, the distance is taken up by reducing the available brake-shoe clearance with the risk of the brake shoes dragging and causing delays to train movement.

Causes of Wheels Sliding

The amount of wheel sliding may be found to depend more upon rail and weather conditions than on the percentage of braking power. The determining factor in wheel sliding is not high braking power alone, but rather the uncontrollable rail and weather conditions in connection with it, against which no permanent provision can be made without a sacrifice in the length of emergency stops during those favorable periods or seasons of the year when conditions warrant the use of high braking power. The coefficient of rail friction increases with increasing temperature and decreasing relative humidity, and decreases with increasing relative humidity and decreasing temperature. The average rail condition changes with the seasons of the year, and, even to a less degree, with the time of day. Advantage can be taken of this fact by using a higher braking power in the summer than may be used in the winter without the risk of a material, if any, increase in wheel sliding. A study of the action of the train, where wheel sliding is experienced, and the coefficient of rail friction is observed at the same time, will often, no doubt, lead to the conclusion that other factors, such as shock, slack action and foreign matter on the rail surface have a wide influence in causing wheel sliding.

Brake pipe leakage, as such, and its effect on resultant air brake operation, needs to be fully appreciated, especially in view of the present trend toward ever increasing tonnage, length and schedule speed of trains and the exacting requirements for safe operating practice. The use of high capacity air compressors, new design feed valves and large main reservoirs has tended to maintain the pressure and enable the prompt release of the brakes on long trains. Still these have emphasized the fact that as long as pressure can be maintained, the leakage which obtains is not so apt to be recognized, so that when the brakes are applied, it is with the result of having a greater reduction made than was anticipated, which is not conducive to smooth train handling. With K triple valves, properly maintained, a sensitive brake results and an application follows in very rapid order.

High Maintenance Standards Required

Mechanical officers are, in the very nature of the case, trying constantly to reduce the cost of maintaining and operating railway locomotives and cars. While new methods, new materials and modern equipment often permit substantial economies to be made, it is important to bear in mind that many of the ways of lowering maintenance cost also lower the standard of maintenance. For example, if fewer inspections are made, the cost will be less but the equipment may not be kept in a proper state of repair. Or, if equipment is given only one-half the number of general overhaulings at suitable

shops that it should have received, a certain saving will be made, but the equipment will perhaps not be in good condition. Oftentimes material is reclaimed which should be scrapped, both from the standpoint of its actual ultimate cost and the character of service resulting, as compared with the use of new parts.

The large question, therefore, is to determine the proper relation between the standard of maintenance and the cost of doing the work. This is a problem which cannot be solved satisfactorily by any known formula, but requires constant study in view of progressive developments both in the operating and maintenance mediums made available to the service. Good maintenance is absolutely essential to good service, and efficient, economical maintenance has a large influence on net profit.

Report on Diesel Locomotives

This report deals with Diesel or oil locomotives designed for road service, three notable examples recently appearing on the North American continent: One on the Canadian National for passenger service and two on the New York Central, one for passenger service and the other for freight service.

In England, the Kitson-Still locomotive has been on trial, the results indicating merit and a future for the Still system; while in Germany the Boston & Maine Diesel direct-drive locomotive, built at the Freid Krupp Works, Essen, is about to be given a trial on the Prussian State Railways. The report also contains a brief resume of Diesel or oil locomotive progress.

There are now more than 40 Diesel or oil-electric and gasoline locomotives in service in the United States and Canada. This type of motive power has demonstrated its practicability for switching service, which, no doubt, was the reason for the large number of orders placed by industrial concerns last year, for of the fifteen oil-electric locomotives ordered during 1928 only four were for railroad service. However, the Diesel locomotive is about to be used in railroad road service on this continent on such a scale as soon to prove whether it is adapted to road service.

Types of Transmissions

It will be noted, too, that the three road locomotives mentioned are all of the electric-transmission type. The advantage of electric transmission lies in the fact that through its use, any inflexibility of the Diesel engine is ironed out until the smoothness of power at the rail and the ease of starting and manoeuvering is even superior to that of the steam locomotive. The Diesel engine can be operated at its full rated power at any train speed while the electrical equipment automatically or with a minimum of attention from the operator, transmits this power (minus some 20 to 30 per cent electrical losses) to the driving wheels of the locomotive, exerting on the rail tractive force appropriate to the train speed. Because of these conditions the majority of Diesels in railroad service are equipped with the electric drive in spite of its high first cost and weight.

Another form of transmission which has possibilities is that of the clutch and gear drive, not unlike that used in motor cars and trucks, though it has been found by experience that gears of the size and weight required for locomotive operation cannot be thrown into mesh without injury when traveling at slightly different rotational speeds, as is the case with automobile gears. Therefore, all successful gear boxes incorporate the constant-mesh principle. The gears for all the different speeds are constantly engaged and running together but only one gear train at a time actually transmits power while the others spin idly upon their shafts. The favorite European practice for engaging the gear wheel with the shaft upon which it rotates is to use a friction selector clutch for each gear so that any error in judgment on the part of the operator in shifting his gears will be taken up as a momentary sliding or slippage of the clutch plates, rather than destructive clashing and grinding, which is unavoidable with the jaw clutches and which reacts unfavorably on the entire transmission and engine. The three locomotives built for the Russian railways a year or more ago, and the one now about to be imported by the Boston and Maine, according to report, use the selector principle.

From Denmark comes the recent announcement of an improvement in Diesel engine design, adaptable to locomotives, the engine being from ten to fifteen per cent lighter and more economical in fuel consumption. At the Second Conference on Bituminous Coal in Pittsburgh last fall, Herr Rudolph Pawlikowski, General Manager, "Kosmos" Mashinenbauanstalt, read a paper on Diesel engines using powdered coal.

The report was signed by Clarence Roberts, Pennsylvania, Chairman; H. P. Allstrand, Chicago & North Western; L. G. Colman, Ingersoll-Rand Company; Harte Cook, McIntosh, Seymour Company; J. E. Davenport, New York Central; H. I. Lipetz, American Locomotive Company; J. K. McNeillie, Delaware & Hudson; F. E. Russell, Southern Pacific; M. Silverman, Boston & Maine; C. E. Uddenberg, State Railways of Sweden and W. H. Winterrowd, Lima Locomotive Works.

Committee Report on Steam Turbine Locomotives

Last year this committee made its first report and gave an historical record, as complete as it was possible to make it, covering all steam turbine locomotives which had been built to the date of the report. This report also gave a preliminary outline for a design for a steam turbine locomotive. This year the committee decided to send copies of last year's report to the various railroads, requesting criticisms and suggestions. This was done and many very valuable suggestions were received.

The report this year outlines in greater detail a design for a complete steam turbine locomotive. By resorting to a greater refinement in design, it is found that the power of this locomotive can be considerably increased and the weight and the cost can be considerably reduced over the design submitted last year.

The design last year covered a locomotive having a nominal rating of 2,500 hp. and weighing 450,000 lb. light, or 530,000 lb. loaded, ready for service. The estimated cost of this locomotive was about $250,000.

The design this year covers a locomotive having a nominal rating of 3,000 hp. and weighing 400,000 lb. light, or 480,000 lb. loaded ready for service. The estimated cost of this locomotive is about $225,000 for one locomotive, or $200,000 each, for ten or more. The latter price would be at the rate of 50 cents per lb. which is in round figures about the same as for an electric or a Diesel-electric locomotive. The cost for the steam turbine locomotive, however, is only $67 per hp. as compared with $135 to $200 per hp. for a Diesel-electric locomotive.

The estimated weight of the steam turbine locomotive is only 160 lb. per hp. as compared with 250 to 400 lb. per hp. for the Diesel-electric locomotive.

After carefully considering all the criticisms and suggestions made on the design submitted last year, it was decided to submit this year a design covering a steam turbine locomotive having a nominal rated capacity of 3,000 hp. and having a maximum operating speed of 65 m.p.h., suitable for either passenger or freight service.

The general design is to be similar to that used last year and to consist of a single-unit frame construction carried on two trucks. The frame is to be in one-piece cast steel. The truck frames are also of cast steel. The main frame is 72-ft. long and carried by the trucks by means of either four-point slide, roller or rocker supports with a center-pin guide, or, two-point slide, roller or rocker supports and a third point for center-pin guide and support.

Electric Transmission Employed

The wheel arrangement of the locomotive is 2-6-0-0-6-2. Electric transmission is to be used and six pairs of driving wheels are to have motors geared to the axles, or, bipolar motors may be used on the axles. The nominal capacity of each motor is to be 400 h.p. for continuous rating, or 500 h.p. for hourly rating.

A 600-750-volt d.c. 900 r. p. m. generator having a continuous rating of 1900 kw., or, an hourly rating of 2,400 kw., is to be used. A 150 kw. 125-volt exciter is to be used for excitation of generator fields and to furnish current for operating auxiliary motors and charging the storage battery. The latter is to be used for lighting and operating pulverizer motor and air-compressor motors when the locomotive is not running. A 3,600-h. p. steam turbine is to be used to drive the electric generator through a set of single reduction gears. This turbine is to be of the compound type. The high-pressure side of the turbine is to operate at a speed of 9,000 r. p. m.; the low pressure-side, at 4,500 r. p. m.

The steam consumption for the turbine will be about 10 pounds per h.p.-hr. when a vacuum of about 26 in. is provided.

Steam for operating the turbine is to be furnished at 450 lb. pressure and 700 deg. F. temperature at the throttle and is to be furnished by a water-tube boiler of the water-level type and a superheater capable of carrying a maximum pressure of 500 lb., the boiler to have three 24-in. inside diameter drums 12 ft. long, at the top, and one 20-in. inside diameter drum at the bottom. The three upper drums are to be located as high as possible and adjacent to each other, longitudinally with respect to the main frame of the locomotive. The lower drum is to be located as low as possible and also longitudinally with respect to the frame of the locomotive.

The fuel is to be coal, pulverized on the locomotive. The pulverizer to be of the high-speed beater type of 4,000 lb. per hr. capacity and directly connected to a 1,750 r.p.m. 75-hp. electric motor, this motor to receive electric current from the 125-volt, 150-kw. exciter, when the locomotive is running, or, from a 100-ampere-hour storage battery when the locomotive is standing.

The pulverizer is to receive air, heated to a very high temperature, from an air heater located in the lowest part of the boiler, only part of the air for combustion passing through the pulverizer. All of the air for combustion, however, is to pass through the pulverized-coal burners.

A comparison of calculated performance diagrams indicates that the amount of useful work on the steam turbo-electric locomotive is 13 per cent compared with 8 per cent for the standard steam locomotive. The diagrams also indicate that the amount of coal burned on the steam turbo-electric locomotive is 4,020 lb. as compared with 8,100 lb. burned by the standard steam locomotive. A diagram, shown in a comparison of the horsepower, tractive force speed and efficiency curves for a steam turbo-electric passenger and freight locomotive with standard steam Pacific type passenger and Mikado type freight locomotives, indicates that the horsepower and tractive force characteristics of the power plant on the turbine locomotive are preferable to those of the standard type steam locomotive.

The report was signed by, L. P. Michael, Chicago & North Western, Chairman; G. S. Goodwin, Chicago, Rock Island & Pacific; C. H. Bilty, Central Missouri, St. Paul & Pacific; W. O. Moody, Illinois Central; G. B. Cumming, General Electric Company; C. T. Perkins, Modine Manufacturing Co.; W. M. Sheehan, Commonwealth Steel Company; V. G. Leach, Peabody Coal Company, and J. Crites, Combustion Engineer Corporation.

(Further proceedings of the convention will appear in next week's issue.)

The Hoosac Tunnel

THE line of the Boston & Maine through the Hoosac Tunnel (North Adams, Mass.) five miles double track, is now equipped with automatic block signals on both tracks for movements in either direction on either track; and the electric locomotives which are used in drawing all trains through this tunnel are being equipped with automatic train control apparatus. This famous tunnel, which for years was the longest tunnel in America, was recently enlarged by lowering the tracks so as to permit the passage of higher freight cars; and the original single block signal section has now been divided into five block sections, permitting the movement of a much larger traffic.

The photograph reproduced in the engraving was taken from a point 150 ft. inside the east portal, and wholly by natural light. The exposure was 11 minutes; and the situation was favored by snow-covered hills, east of the tunnel, reflecting the rays of the sun in the western sky.

Hoosac Tunnel—Looking West
A daylight photograph

Left, W. D. Robb using telephone on car—Center, Car equipped with 8-wire antennae—Right, W. G. Barber, speaking with Mr. Robb from office in Toronto

Canadian National Demonstrates Train Telephone Service

Full two-way communication links passenger with all Bell telephone subscribers

THE practicability of telephone service between a moving train and regular telephone lines was demonstrated on May 5 by the Canadian National. Continuous communication was maintained between the train and the Canadian National offices in Toronto, Ont., during the entire demonstration which lasted about two hours. Plans have been made for installing regular service between Toronto, Ont. and Montreal, Que.

A party of railroad and newspaper men boarded the train at Davenport, Ont., near Toronto, and the train proceeded northward toward Allandale, Ont., at a speed between 30 and 40 miles an hour. The track on this line is of a somewhat lower standard than C. N. R. main line track on which the telephone will be used regularly and the noise interference in the car was therefore probably greater than it will be on through service.

Every one on the train was given an opportunity to talk over the telephone to various men in the C. N. R. offices in Montreal and many took the opportunity to dictate telegrams over the telephone which were sent to various points in the United States and Canada. No one experienced any difficulty in hearing or in making himself understood.

The feature of the demonstration consisted of sending out a message from the train telephone and relaying it back to the train by radio. W. D. Robb, vice-president in charge of telegraph and telephone department, Canadian National Railways, picked up the train telephone and asked to be connected with W. G. Barber, general manager of the C. N. R. telegraphs, in his office in Toronto. After the connection was made the call was transferred by land wire to the C. N. R. radio broadcast station in Montreal and an announcement was made over the radio by Mr. Robb. This announcement was picked up by the entertainment radio set located on the train, so that every one in all the cars of the train could hear. Mr. Robb spoke as follows:

"The announcer has told you that we are now broadcasting from a moving train through the telephone. This is a unique feature in the history of radio development, and a further evidence of the enterprise of the Canadian National Railways in their continued efforts to give every possible convenience and pleasure to patrons making use of the National System. We were the first railway to equip trains with radio receiving sets for the entertainment of our passengers, and now we are about to embark on a new enterprise in the way of affording passengers telephone facilities. In the past a traveler on the train was isolated from oral communication with his home and office. This handicap to the business man and others we now purpose to remove."

Shortly after this initial demonstration, Mr. Robb received by telephone a message wired by Sir Henry Thornton as follows: "Hearty congratulations on success of experiment. Will revolutionize communication on moving trains. Please thank all concerned for their splendid efforts."

All the guests on the train signed a joint telegram of congratulations addressed to Sir Henry Thornton. This was also telephoned from the train and forwarded by wire.

The apparatus used for the test consisted of a radio transmitting and receiving set located in a passenger train car and a similar set in a small building at Davenport near Toronto. The receiving sets are similar to those used by radio listeners for reception of radio broadcast programs.

A single aerial on the car and one at the Davenport station were used for both transmission and reception. Both sending sets are 50-watt sets capable of putting

about 35 watts on the aerial, one transmitting at 80 kilocycles and the other at 160 kilocycles.

It is in this respect that the C. N. R. apparatus differs from that in use in Germany. The German train telephone uses only one frequency for sending in both directions and the speaker must push a button while he is talking and release the button before he can listen. The C. N. R. telephone is used in the usual manner. It is this feature which made the development particularly difficult. The strength of the signals sent out is so much greater than those received that the sending wave drowns out the incoming signal. This difficulty was overcome by the use of special band pass filters.

Another desirable feature of the equipment is that the aerial is confined to one car. It consists of eight No. 9 B. & S. copper wires about 70 feet long, each mounted separately on Pyrex pin type insulators on the roof of the car. This aerial is used for both transmission and reception. The German system uses a long aerial which extends over several cars and which must be connected and disconnected when the cars are coupled and uncoupled.

Power for operation of the experimental telephone is obtained from the car lighting battery and from an 800-volt storage type B battery. In the permanent equipment a small motor generator set will be used in place of the B battery. It is expected that the amount of space required will be about equal to that in one Pullman car section.

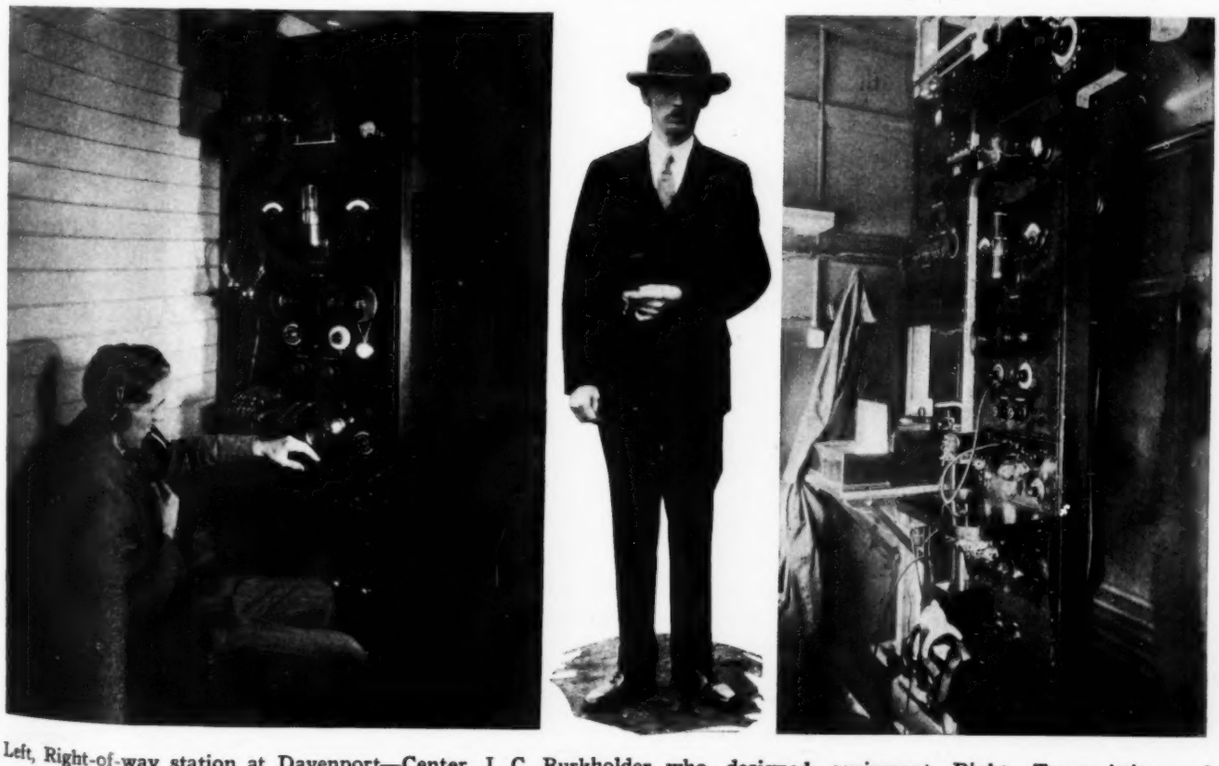
To insure uninterrupted communication, auxiliary pole lines are located at places where the telegraph lines are more than 200 feet from the track and where the lines are carried underground in cable through cities.

The receiving set in the car and the one in the right-of-way station operate continuously. When the subscriber on the train wishes to speak to some one in a distant city, he picks up the telephone and asks the operator on the train for the number. The operator then turns on the sending set and sends out ringing impulses —1000 cycles per second. These radiate from the aerial on the roof of the car and are caught up and carried along by the telegraph and telephone lines located along the right-of-way. These signals are picked off the transmission lines at the right-of-way station and operate a relay which rings a bell. The operator in the right-of-way station then turns on his sending set, asks for the call, and puts it through the nearest Bell telephone central in the usual way. The voice waves are carried back and forth in the same manner as the ringing wave, the system being what is called carrier current telephony. The calling of the person on the train is accomplished by a reversal of this process. It is estimated that the rates for service will not cause an increased charge of more than 20 per cent.

The same telegraph and telephone lines, which transmit the telephone carrier current are used for the transmission of regular telephone and telegraph messages and are also used to transmit ten carrier-wave telegraph signals in either direction. Two wires are sufficient for such transmission.

An important part of the development work consisted of selecting the most suitable of carrying frequencies. The low frequencies used; namely 80 and 100 kilocycles, correspond to 3,748 and 1,874 meters. These long wave lengths will carry voice transmission at low power only over short distances, but serve very well as carrier current frequencies. The power used is only about 35 watts on the aerial. It is practically impossible to pick up the carrier wave by means of an aerial at a distance of more than 200 ft. from the telegraph lines. With this arrangement a considerable degree of privacy is insured as it is unlikely that a radio set covering these waves will ever be located sufficiently near the telegraph lines to pick up, or be interfered with by the train telephone carrier wave.

The apparatus used was developed by J. C. Burkholder, chief engineer, Canadian National Telegraphs.



Left, Right-of-way station at Davenport—Center, J. C. Burkholder who designed equipment—Right, Transmitting and receiving equipment as used on car.

Cleveland

Meeting of Railwa

Members and Guests at the Opening Session of the Convention

THE Railway Accounting Officers Association held its forty-first metting at the Hotel Cleveland, Cleveland, O., on April 30-May 3. Attendance totaled 333 members with a grand total, including members' families and guests of 576—the largest attendance in the history of the association, with but two exceptions. Discussion covered a wide range of subjects, among them being the accounting recommendations of representatives of the Purchases and Stores Division of the American Railway Association, problems of the freight accountants and the situation with regard to Ex Parte 91, the revision of the accounting classifications, now in the hands of the Interstate Commerce Commission.

The principal speaker of the convention, that is, outside the members and officers of the association, was Professor W. J. Cunningham of the Graduate School of Business Administration of Harvard University, who delivered an address entitled "Transportation Changes Since 1920" at the opening session of the meeting.

Officers elected for the ensuing year were as follows: President, T. O. Edwards, general auditor, Southern Pacific; first vice-president, W. E. Eppler, comptroller, Delaware & Hudson; second vice-president, G. J. Bunting, vice-president, Illinois Central; secretary, E. R. Woodson (re-elected). New Orleans was chosen as the place of next year's meeting, the selection of a date being left to the executive committee.

The first day of the convention was given over to open meetings of the various committees, with the convention proper convening on the morning of May 1. At this opening session the addresses of Professor Cunningham and President Johnson (comptroller, Chicago, Burlington & Quincy) were delivered. President Johnson's address follows in abstract:

President Johnson's Address

"Throughout the year close contact has been maintained between the various committees and representatives of the Interstate Commerce Commission in matters pertaining to the accounts. The association jealously guards this contact realizing, as must also the commission, that the best results can only be obtained through co-operation of the two agencies most vitally concerned. In the accounting contacts between association and commission representatives, differences of opinion naturally arise but these differences have been overcome and a mutually satisfactory solution has been found to every problem presented. It is to be hoped that in the matters of depreciation and revision of accounts, the commission will give fullest consideration to the practical aspects of the case to the end that

Accounting Officers

One of the Largest Meetings in History of R. A. O. A.-Plea Made for Simplified Freight Divisions and Reduction in Overcharge Claims-Outside Audit Bureaus Not Favored

theoretical accounting with its resultant confusion, misunderstanding and additional expense be not inaugurated.

"It is unfortunate that a greater number of the members of the association do not take a more active part in its affairs throughout the year. The Agenda, [a digest of proposed committee reports which is published in book-form prior to the convention,] and Annual Report bring to the members the result of the year's work in condensed form but neither conveys, nor can it be made to reflect, the intensive study which has been accorded each subject by the comparatively few to whom it was assigned before a final conclusion was reached.

Members Should Attend Committee Meetings

"To one not familiar with the procedure followed by the committees in the handling of their subjects, attendance at some of the meetings will prove highly instructive and well worth the time and expense. In order to afford non-members an opportunity to attend committee meetings and obtain benefits therefrom I recommend that when standing committee meetings are called the secretary invites to be present association members interested in the subjects to be discussed, within a certain radius of the meeting place, and I urge chief accounting officers to permit their subordinate officers to attend.

"I am not unmindful of the fact that a procedure of this kind may have a tendency to interfere to some extent with the prompt disposal of the docket but I firmly believe the benefits to be derived outweigh the disadvantages.

Why the Manual of Procedure Was Not Published

"There are a few items in the Agenda for this meeting to which I wish to call special attention. Subject One in the report of the executive committee, [a statement that 'Accounting Procedure,' the manual usually issued annually, was not issued last year, at the suggestion of the president,] seems harmless enough but my decision in the matter brought forth considerable fireworks. My action in declining to authorize issuance of the Procedure in bound form, as had been done in the past years, was due entirely to the fact that there were so few changes that the expense of reprinting the Procedure in its entirety was not justified.

"The last edition of the Procedure contains 1016 pages bound in permanent form. The changes effected at the 1928 convention cover eight pages.

"I am not opposed to the issuance of the Procedure. I have recommended and still do that the Procedure be issued in loose-leaf form, inserts to be issued thereafter to provide for corrections and amendments.

Great Work Involved in Ex Parte 91

"Subject One in the report of the committee on general accounts treating with classification revisions is short, attention merely being directed to certain previous reports with the statement that a further report will be submitted later.

"Behind those few words lies an untold volume of some of the most intensive work ever undertaken by members of this association. They hide completely the story of the months of wholehearted, unselfish effort on the part of a comparatively few association members, co-operating with members of the Bureau of Accounts of the Interstate Commerce Commission, to solve one of the most perplexing questions which has been presented to the carriers in many years; that of completely revising the existing classifications of accounts to fit present-day needs.

"To those members who so willingly sacrified their own work to serve the carriers at large, this association is deply indebted.

"Acting under authority conferred upon it by the association at the Atlanta convention, your executive committee selected witnesses, employed counsel and incurred such other expense as was necessary to protect the carriers' interests in the hearings before the commission. Both the general public and the carriers were given an opportunity to present their views and it is expected a decision will be forthcoming from the commission in the near future.

"Pending a decision in connection with revision of accounts it was useless for the committee on general accounts to consider the many accounting questions submitted to it and these were all referred to the sub-committee co-operating with representatives of the commission in the general revision.

Necessity for Simplifying Freight Rate Divisions

"The freight committee has treated with a large number of subjects principally of an interline nature.

"In connection with that branch of the work, I sincerely hope the freight accountants will continue to press for simplified divisions and that chief accounting officers will give them full support in their efforts to bring about the desired result. Disputed divisions, the result of not establishing fixed divisions at the time through rates are inaugurated, are still a source of considerable confusion between carriers. Some progress has been made in overcoming this difficulty but continued pressure should be brought to bear, to the end that divisions be fixed at the time the through rates are inaugurated.

"The full work of the passenger committee is not embodied in the report submitted. It also gave consideration to matters in connection with Pullman surcharge other than that contained in Subject 10 [a recommendation that a request for more complete information from the Pullman Company on cars handled in special service be referred to the Pullman surcharge accounting committee of the Association of Railway Executives]. The committee's report with reference to the related matter was submitted to the Pullman surcharge committee for its consideration. [President Johnson here mentioned several other committees of the association and their work].

Other Committee Activities

"The overcharge committee is conducting a campaign toward overcoming, in as large a measure as possible, overcharge and undercharge claims and during the year this matter was presented through sub-committees to five sectional claim conferences enlisting their co-operation. It may confidently be expected, that as time goes on, this movement will bear fruit.

"A few years ago the committee on statistics prepared a glossary of statistical terms that attracted favorable attention. Apparently it has not been revised or added to since its compilation. This may well be borne in mind for the future.

Make Haste Slowly in Changing Mandatory Rules

"Some years ago this association adopted mandatory rules for certain phases of interline accounting. Experience has demonstrated the wisdom of this step in that an observance of the rules has not only reduced accounting work through elimination of disputes, which formerly were quite common, but has prompted impartiality and these rules are now recognized as an indispensable medium of efficient and economical accounting between carriers. The adopton of mandatory rules was a forward step but the entire field has undoubtedly not been fully explored and as time goes on further developments in this direction may be expected.

"In this connection, however, a study of past years' reports indicates that certain of the mandatory rules are being changed almost yearly. This results in some confusion and inequity in that the question is raised as to whether the change is retroactive and to what date. No rule can be made to fit every existing condition; it can only be framed in a spirit of fairness to those concerned and at times it may be necessary for each of us to concede some point for the good of all.

"The suggestion is therefore offered that a time limit be fixed within which mandatory rules may not be changed unless necessitated by tariff changes or regulatory agencies.

"May I not, at this time, voice an urgent appeal to members of this association to take a more active interest in its affairs. Through this association ideas and practices can be broadcast to its membership and no member should hesitate to give others the benefit of what he has originated. Constructive suggestions will go a long way toward assisting your officers and committee members in the performance of their duties."

Committee on General Accounts

At the meeting of the committee on general accounts on April 29, M. J. Gormley, chairman of the Car Service Division of the American Railway Association, appeared and discussed with the committee the question of the classification of carloads or l.c.l. on the basis of the weight of lading—shipments 10,000 lb. or more to different consignees at same destination being classed as carload shipments regardless of the basis at which contents are billed. Mr. Gormley stated the belief that classification on this basis tended to hold down the reported tonnage of l.c.l. cars, which are loaded by the railroads. He said further that three railroads had conducted tests and had found that, by classifying cars according to the actual billing of their lading, the number of l.c.l. cars if computed on this basis, increased upward of 13 per cent.

Some objection to Mr. Gormley's plan was expressed, based upon the belief that under it experienced rate clerks would be required to gather the data for the commodity statistics, and that this would involve unwarranted expense. Mr. Gormley stated that the railroads which had conducted the test had informed him that they could gather the information upon the basis of actual billing without additional expense. The question was referred to the committee on statistics. Mr. Gormley made it clear that he did not wish any unwarranted expense to be incurred in the compilation of this information, but merely felt from the results obtained by the railroads which had conducted tests that the matter might be one of considerable importance.

Division VI Representatives Offer Co-operation

A. L. Sorensen, manager of stores of the Erie, and C. H. Murrin, special accountant, Illinois Central, appeared on behalf of Division VI—Purchases and Stores of the American Railway Association. Mr. Sorensen stated that great progress is being made with the stores departments' material stock reports which are now being supplied to the secretary of Division VI by railroads having 65 per cent of the mileage of the country and copies of which are supplied to all railroads which participate, thus giving these railroads comparable data on stocks on hand and rate of turnover. He said that, with this question now in progress of being settled, his principal concern was now with the question of accounting for stores department expense. He said that when this question came up before the committee on general accounts in connection with the revised accounting classifications he would appreciate it if the committee and the association would call in a committee of the Purchases and Stores Division to confer with it. It was developed that the accounting officers have already recommended the creation of a primary account "Stores Expenses" to accomplish the desired purpose but that the recommendation is being tentatively held in abeyance by the Commission's representatives.

Fred A. Barnes, Assistant Director, Bureau of Accounts of the Interstate Commerce Commission raised the question of accounting for stores department expense where material was delivered to mechanics by stores department employees, as compared with roads on which mechanics or helpers themselves secured it from the stores. He pointed out that, with a separation of stores department expense, roads maintaining stores department delivery would show proportionately higher stores expense and lower maintenance expense and that on roads requiring mechanics to procure their own materials the reverse would be the case. Mr. Murrin summarized the accounts desired by the stores department as the material stock report and a primary account for stores department expense. The question was referred to a sub-committee for action.

The matter of accounting for rents was discussed briefly. Mr. Barnes said that there was no question of royalties for mineral lands, etc.; that these represented the sale of capital assets. He stated that right-of-way leases, of which there are thousands, might be included in transportation revenue. Some discussion developed over whether or not "air rights" should be included in transportation revenue and, if so, whether the capital value of such "air right" property would be included in valuation. The Commission's representation withdrew their proposals, and on motion, the subject was dropped from the docket.

The Accounting Classification Revision Case

The report of this committee to the convention proper was presented by its chairman, G. E. Bissonnet (general auditor, Union Pacific). Mr. Bissonnet called upon J. J. Ekin (comptroller, Baltimore & Ohio), as chairman of the sub-committee which presented the railroads' testimony before the Interstate Commerce Commission in the accounting classification revision case. Mr. Ekin reviewed the conduct of the case briefly and extended thanks to the many accounting officers who testified. He mentioned the fact that the complete record in the case has been distributed to chief accounting officers, because of the great importance of the case to the railroads. The Interstate Commerce Commission, he said, would soon serve upon the railroads a tentative report in the case and he promised that this report would also be given the widest distribution among accounting officers.

Fred A. Barnes of the Bureau of Accounts of the Interstate Commerce Commission called attention to the extent to which cost accounting practices had entered into the testimony in the hearings in this case, particularly cost accounting in industry. He said that, although it was not a part of the record in the case, two large steel companies had different methods of cost accounting—one doing its costing as a matter of information only, when needed; the other keeping complete cost accounts which entered into its financial accounting plan. In this connection he characterized the proposal for the setting up of a separate account for stores department expense as a step away from cost accounting.

A sub-committee reported recommendations made to Dr. M. O. Lorenz, director of the Bureau of Statistics of the Interstate Commerce Commission, relative to changes in Schedule 531 in the annual report of railroads to the commission and in the monthly statement of passenger service performance which would more clearly separate passenger operations between steam, electric and motor-car.

Recommendations for a change in the details of reporting electric locomotives in the annual reports to the commission to give more detailed and informative data were reported. A change in the form of accounting for highway motor vehicles used by the railways, or by their subsidiaries, or operated under contract was likewise recommended in a letter to Dr. Lorenz.

Accounting for Pension Reserves

The committee, following a receipt of a memorandum from T. O. Edwards (general auditor, Southern Pacific) has appointed a sub-committee the services of which it has offered to the Interstate Commerce Commission to aid in finding a solution to the problem of accounting for pensions when set up as a reserve instead of being paid directly out of current funds. Mr. Edwards said that "the only sound basis for financing a pension plan is on a full reserve." He stated, however, that under present rules this reserve could not be set up without great difficulty. It is with the hope of simplifying or eliminating some of these restrictions that the committee has offered its services to the commission.

Committee on Freight Accounts

The report of the committee on freight accounts was presented by Chairman Fulton (auditor of traffic of the Central of Georgia). Mr. Fulton expressed disagreement with the plan of not issuing the manual of Accounting Procedure each year or of issuing it in looseleaf form. If this could not be done, he suggested a separate manual for freight accounting such as is provided for overcharge auditors. He said that the manual of Procedure was placed in the hands of his subordinates at outlying points and that they could not be expected to watch every supplement to it, along with their other duties, and still avoid mistakes.

This committee reported upon a total of 71 subjects considered by it during the year, and space requirements preclude even a digest of these subjects here. At the end of the presentation of the report, however, the chairman called upon three members of the committee to read papers on subjects which, while of primary importance to freight accountants, were of a less detailed technical nature than some of the matters dealt

with in the report proper. Outstanding problems of freight accountants they were, which could be solved only when they were understood and appreciated not only by chief accounting officers but by other railroad officers as well. The first of these speakers was A. J. Moran, auditor of freight receipts of the Erie, who reported on the subject of percentage divisions of interline freight receipts. He said that the Railway Accounting Officers Association had brought this subject to the attention of traffic officers and the various traffic associations for a number of years and had made considerable progress in securing simplification of these divisions. He said that many complicated divisions had been reduced to a two-figure basis, but that now the freight accountants were confronted with an entirely new situation through a large number of new rates established last year for which no divisions had been agreed to.

New class rates were put into effect in Official Classification and Southeastern territories with the understanding that percentages when finally agreed upon should be retroactive to July, 1928; station-to-station percentages were left to the accounting department to establish. A similar situation obtains between the Official and Southwestern territories. Temporary methods of settlement have been going on for a year now and when permanent divisions are agreed upon, all settlements which have been made will have to be readjusted, bringing a heavy accounting expense.

Mr. Moran suggested that accounting committees be organized in the various territories to keep in touch with the respective traffic associations and to keep constantly before these officers the pressing nature of the problem; he stated that such a committee already was functioning with some success in eastern territory.

The presentation of this paper brought forth a general and approving response. The great additional expense, the uncertainty and the increased liability of errors resulting from undecided and complicated divisions was emphasized, as was the urgent necessity of appealing constantly to freight traffic officers to put an end to prevailing conditions.

F. W. Pope, auditor of freight accounts of the Southern Pacific, was the next speaker. He chose as his subject the Methods for Securing Proper Waybilling. He outlined some of the more common errors found in waybills, the difficulties arising from these errors and concluded with the opinion that the only solution to the problem was constant supervision and instruction of employees as to proper procedure in making out and handling these basic documents.

"A Question of Common Honesty"

The last formal statement presented in connection with this committee's report was presented by W. S. Harrison, general auditor of revenues of the Canadian National. Mr. Harrison defined his subject as a "question of common honesty." Railroads should, he contended, when revising interline freight settlements, issue statements of difference not only for debits to the accounts of foreign lines, but also for credits to these lines. Continuing, he said in part:

"If you will refer to the Procedure that is presently in effect, you will find that Rule 68 provides that the waybill destination carriers shall prepare abstracts of all waybills received and reported by receiving agents, showing on the abstracts, the per cents or other bases of divisions and the apportionment of revenues. Then Rule 79 states that when the forwarding or intermediate carriers locate differences in waybills, abstracts, division statements, correction accounts or recaps., they shall promptly take them up for adjustment through the channel of a statement of difference.

"I believe that most roads are making a revision of both sides of their interline accounts, but there are roads which are revising only the other fellow's accounts to them, they no doubt considering that the other fellow's revision of their received side, if honestly made, and statement of differences actually issued for all errors located should be sufficient.

Overlooking the Credits to Foreign Lines' Accounts

"I am entirely in sympathy with that thought, but after keeping this statement of differences for a few years, one cannot help but come to the conclusion that there are a few carriers which are not playing the game. When they issue a statement of differences, it is for the debits to the other fellow, but unfortunately they forget the credits."

Mr. Harrison went into considerable detail in discussing the seriousness of this problem and left the suggestion that independent audit bureaus which offered to make audits looking for these differences on a basis of payment of a certain percentage of the proceeds so collected might be responsible for the reporting of debits to the exclusion of credits. A general discussion of the problem followed, which was quite as lively as any which occurred during the entire convention.

Audits by Outsiders Not Favored

No one spoke in favor of turning over work of this character to outside organizations. It was pointed out that the entire amount involved was railroad money. If settlements of differences were obtained by railroad organizations themselves, then after the settlements were made, all the money still remained with the railroads. If, on the other hand, outside organizations were permitted to come in, the settlements would not be as fair as those which the railroads themselves could, with care, make among themselves—and the net result would be that a substantial percentage of the sum of these settlements would find itself into non-railroad hands.

The opportunity the utilization of these outside organizations might offer for misuse of the information obtained, when making such audits, was mentioned. Suppose such an organization checking for sums due Road A should also for its own use compile a list of sums owed by Road A. It could get its 40 or 50 per cent commission from Road A on sums collected and then approach Road A's creditors, telling them that it could obtain money for them from Road A. The result would be that the differences between the roads involved ultimately would be settled upon a less equitable basis than they could have settled it among themselves—and the outside organization would have pocketed almost half of the gross sums involved for its services.

The provision of adequate and competent forces in freight accountants' offices, a careful surveillance of employees and strong disciplinary measures with employees failing to enter credits as well as debits when preparing the statements of differences were recommended as measures for meeting the situation.

Other Committee Reports

The committee on passenger accounts reported action on 40 different subjects and that on disbursement accounts on 30. Chairman Bramon (general auditor, Wabash), in presenting the report of the latter committee, called upon B. Lancaster, auditor of disburse-

ments of the Union Pacific, to supplement the committee's recommendations with reference to the handling of annual stores department inventories. The report of the committee on this subject occupied more than 20 pages in the printed Agenda and Mr. Lancaster's remarks served to clarify and emphasize some of the points brought out in this report. He stated as his belief that the accounting department should supervise the taking of this inventory, but that the actual weighing, etc., should be done by the stores department. He particularly warned against leaving the physical check-up prior to actual inventory to the last minute, since this might result in adjustment charges in one month which would be abnormally large and perhaps embarrassing at the particular time when they might occur. The committee also reported upon proper methods for checking and timekeeping and payrolls and F. A. Deverell, assistant comptroller, Baltimore & Ohio, spoke in further elucidation of this subject.

W. J. Farrell, secretary of the Purchases and Stores Division of the American Railway Association, and C. H. Murrin, special accountant, Illinois Central, also representing that division were called upon and they joined in expressing appreciation to the association for the way in which it was assisting in the solution of their problems.

G. H. Nero, auditor, New England Steamship Company, and chairman of committee on water line accounting, which reported upon but one subject, said that the committee believed that it would have a larger docket at the next meeting. President Johnson suggested that perhaps some method of co-ordinating the work with that of the Water line accountants organization of which Mr. Nero is president, might be worked out and Mr. Nero agreed.

The committees on terminal companies' accounts, statistics, conference with the Passenger Traffic Officers' Association and the committee which attended the convention of the public utilities commissioners presented short reports while committees for conference with the Mechanical Division of the A. R. A., for conference with the Treasury Officers' Association, the committee on accounts of Class II railways and on valuation accounting had nothing to report.

A Program for Reducing Overcharge Claims

The report of the committee on overcharge claims was presented by D. W. Reed (auditor of overcharge claims, Norfolk & Western), its chairman. The committee reported on 29 subjects which it considered during the year and which were published in the Agenda. One recommendation, i. e., that future decisions of the R. A. O. A arbitration and appeal committee be published in pamphlet form quarterly, was rescinded and the subject taken back into the docket of the committee for future consideration.

After the report had been presented the chairman called upon H. C. Holzbach, auditor of freight accounts of the Chicago, Burlington & Quincy, who presented a paper on a Program for Preventing Overcharge Claims. Mr. Holzbach told of the activity of the district claim conferences and bespoke the co-operation of chief accounting officers in the campaign to reduce overcharge errors and mentioned the difficulties experienced with some of the claim bureaus. Secretary Woodson suggested to the members that if any of these bureaus were suspected of unethical or unfair practices, the attention of the better business bureaus which are functioning in some cities be called to their activities.

W. C. Wishart, comptroller of the New York Central, told of several unfortunate experiences which he had personally had as a receiver of freight, being quoted a certain rate before shipment and charged a higher sum on delivery. He suggested that as long as rates were so complicated that even experts could not quote them correctly when asked, an opportunity arose out of this complexity and misunderstanding for the entrance of "sharks".

Other Business

The following were elected to honorary membership in the association: F. W. Charske, vice-chairman, finance committee, Union Pacific; J. F. Fairlamb former auditor of revenue, New York Central; W. L. Rothstein, former auditor, Baltimore, Chesapeake & Atlantic; J. L. Ferris, former auditor of passenger receipts, New York Central; J. A. Taylor, former comptroller, Central of New Jersey; J. O. Clifford, former auditor of passenger accounts, Chicago & North Western; and R. L. Porter, former auditor Chicago & Western Indiana. Memorials were read for ten members deceased since the last convention.

The annual banquet of the association was held on the evening of May 1. There was no speaking and an elaborate program of entertainment was provided. On May 2, O. P. and M. J. Van Sweringen of Cleveland tendered a luncheon to the members and guests.

A PETITION of the major stockholders of the Pittsburgh & West Virginia for a temporary injunction to restrain the transfer of the Wheeling & Lake Erie station site at Ontario street Cleveland, Ohio, to the Cleveland Union Terminals Company, was overruled by Judge Paul Jones in the federal court at Cleveland on April 27. The petition was considered a move on the part of the Taplin interests, the largest stockholders in the Pittsburgh & West Virginia, which in turn owns much of the stock of the W. & L. E., to prevent the control of the W. & L. E. from going to the Van Sweringen interests.

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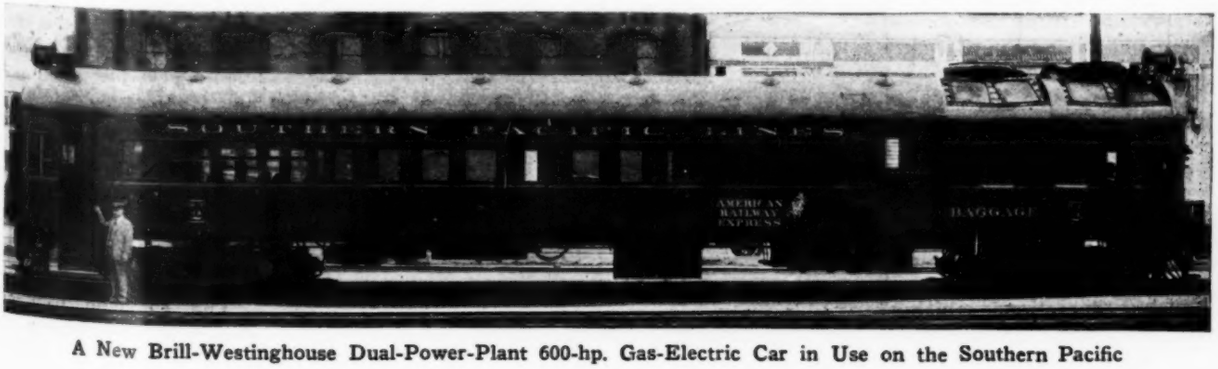


A New Brill-Westinghouse Dual-Power-Plant 600-hp. Gas-Electric Car in Use on the Southern Pacific

Southern Pacific Stores Are Warehouses Plus

Oakland plant performs many services for other departments—Prepares building materials

Automotive Equipment

THE Southern Pacific—Pacific System, maintains a supply unit at West Oakland, Cal., across the bay from San Francisco, which, in addition to carrying all miscellaneous materials for local needs, functions as the general store of the Pacific Lines for electrical, signal, train control, train lighting and telephone and telegraph supplies, cloth and trimmings for employees' uniforms, also push, hand and power track cars and repair parts, cast iron pipe, water and oil columns and fittings, bridge and building lumber, piling, and all repair parts and supplies for 26 ferry boats and other marine equipment. The general store for all stationery used on the Pacific Lines is also located there.

While the stationery store and the store for supplying the electric traction lines of this company are the only two new supply facilities in the locality, all of the buildings show a high standard of storekeeping inside. Antiquated racks have been replaced by more modern patterns, light-reflecting paints have been used generously on floors as well as walls, all materials are neatly piled and shelved, and the methods by which stocks are controlled attest to completeness in organization and supervision from the moment materials are ordered to their ultimate disposal by delivery to shop mechanics or to line forces.

Operate Van Service

The Oakland store's work is particularly interesting, however, for those other than strictly warehousing operations which are performed as an integral part of stores department routine. Automobile trucks with trailers transport all material and supplies between the stores and all departments located in the East Bay District, a territory approximately 30 miles in area, into which, by necessity, the forces requiring material, from towermen to shopmen, are numerous and widely scattered. The Southern Pacific is well known for its supply train work and there was a time when these supplies were distributed by that method, but with the development of motor trucks, that plan quickly gave way to the more modern methods until now not only are the short hauls made by the stores department vans and all the company's laundry and commissary supplies so served, but every 30 days these auto trucks with their trailers and loads take to the highways as a supply train, delivering and picking up materials from all sections, signal towers, crossing watchmen and outlying stations in the district.

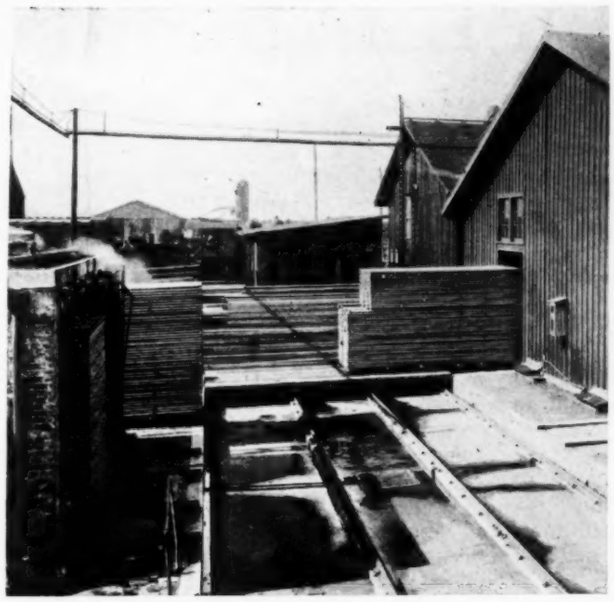
Upper Floor, Store 1

A large tie yard is located at Oakland, where ties and piling, reaching Oakland by either water or rail, are piled for seasoning before treatment. This yard is marked by the orderliness of the piling, notwithstanding the practice of handling this material on a piecework basis, and every pile carries a stencil of its date and count. A creosoting plant is also located at Oakland, and attached to this facility is modern machinery for perforating, boring and adzing ties before treatment.

The Oakland plant is also a concentration point

for all second-hand and scrap rail for the Central district of the Pacific Lines. The rail is classified, straightened, cropped and drilled there, and the usable rails stored for future use by the maintenance of way department, while the remainder are loaded on order and shipped to market. For the handling of this lumber, piling, rail and scrap, five heavy-duty locomotive cranes with long booms are used, two of them being equipped with electric magnets and with floodlights for night work.

The latest undertaking at Oakland is cement sack cleaning. Here, they no longer shake the sack, but use a vacuum system which pulls the sack inside out, thoroughly loosens the fabric and removes the cement, making it possible for one man to clean, inspect, sort and tie into bundles from 800 to 1,000 sacks per eight-hour day, and at the same time to accumulate several hundred pounds of cement. Some of these sacks originate at Oakland itself, for Oakland is also a manufacturing point for various concrete products adapted for use on the Pacific Lines.



Lumber Yard from Dry Kiln to Dry Shed

The store department has long made various articles for its own needs, for example, foundation blocks and portable platforms for material, but it also manufactures an increasingly large number of products for the maintenance of way department of the Pacific Lines. Principal among these are telephone booths, relay and battery houses, culvert pipe, monuments, drain boxes, battery boxes and bridge slabs. It is significant of the growth in this service that all stores have been or are now being supplied with concrete vaults from this plant in which to keep all stock books when not in use, thus insuring their preservation in case of fire.

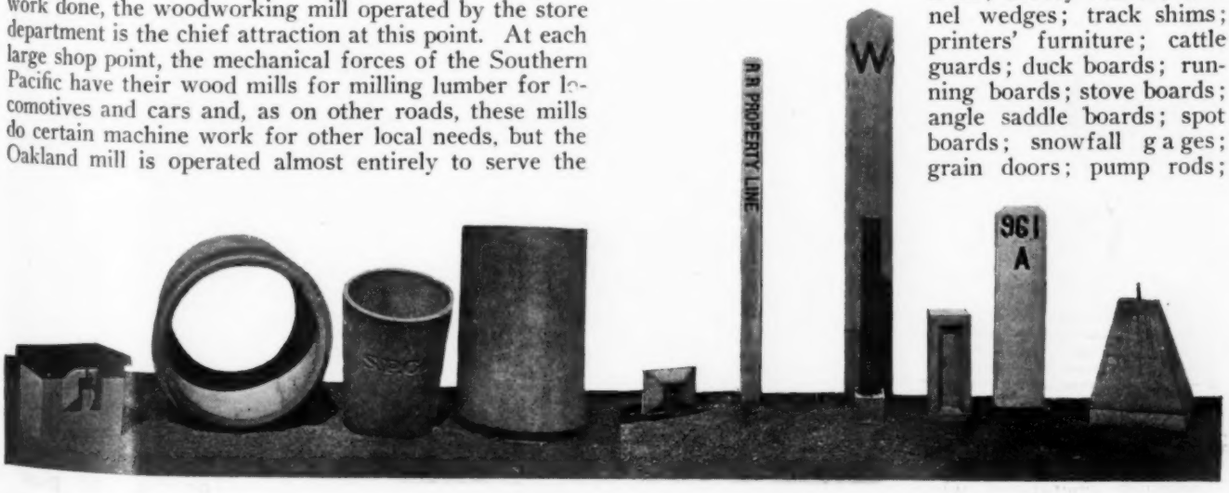
Frame Lumber for Buildings

In point of number of employees and variety of work done, the woodworking mill operated by the store department is the chief attraction at this point. At each large shop point, the mechanical forces of the Southern Pacific have their wood mills for milling lumber for locomotives and cars and, as on other roads, these mills do certain machine work for other local needs, but the Oakland mill is operated almost entirely to serve the maintenance of way and particularly the building department of the Pacific Lines. This service has grown until it extends not only to the manufacture of repair parts for hand cars, etc., but to the manufacture of sash and doors and to the framing of bridge timbers, and even to the precutting of all lumber used in erecting section houses, depots and other buildings on the property. The mill is equipped with machines for almost every need, some old in service; others, like a newly installed electric matcher of the most modern type. There are dry kilns to season timber for cabinet work and the kiln apparatus is modern to the point of including an electrical device for determining the moisture content of wood before or during the process of drying instead of requiring this to be done by the slower process of baking. The mill is equipped with a blower system which eliminates the accumulation of dust in the mills and instead carries it to storage bins for use as fuel; all cuttings are carefully sorted, and the unusable material put into a grinder and pulverized for use as fuel.

The wood mill products are as follows:

Framed bridge and trestle timber; framed turntable and curb timbers; framed switch ties for the signal department; framed crossing plank; special sizes of rough lumber, dressed lumber, and all materials for buildings, including lumber cut and framed, sheathing, trim, doors, windows and frames; built-in case work, etc., for stations, packing houses, tool houses; dwellings for signal maintainers, section foremen, trainmen, laborers, etc., and pump houses; scale houses; flagmen's houses, etc.

Culverts; tapered ties; blocking for shipping autos, tractors, etc.; pole stubs; rail racks; sacked and bulked sawdust; mouldings; trunking; sugar strips; cross arms; survey stakes; tunnel wedges; track shims; printers' furniture; cattle guards; duck boards; running boards; stove boards; angle saddle boards; spot boards; snowfall gages; grain doors; pump rods;



Items Manufactured of Concrete

Part View of Tie Yard. Piling on Trains on Way to Creosote Plant

powder braces; relay posts; fire barrel covers; low bridge warnings; stock chutes; corral gates; farm gates; crossing gate arms; station derricks; material racks; portable burlap toilets; single and double, portable and stationary toilets; office counters; cupboards; stationery cabinets; desks; bulletin boards; desk name blocks; picture and poster frames; tariff pulpits; coat racks; sinks and drain boards; stock taking stands; mail trays; drawing tables; operators' and dispatchers' tables; louvres; seats and settees; doors and door frames; sash and window frames; window and door screens; fire doors and medallions.

Water tanks of 17, 30, 50 and 65 thousand gallon capacity; tank roofs; indicators; towers; gravity cars; hand cars; push cars; lumber cars; lumber trucks; warehouse and box trucks; baggage trucks; hand baggage carts; velocipedes; wood parts for motor cars; auto truck bodies; extension, car cleaners' and painters' ladders; trolley insulators; flag poles; tent poles; pike poles; rollers; curve stakes, engraved; tamping bars; terminal boards; bridge commanders; timber, piano, rail, tongue, heavy freight and meat dolleys; rail fillers; baggage truck wheels and peavy handles.

Boxes: battery; battery carrying cases, battery trays, cable, relay, terminal, lighting meter, lightning arrester, drain, sump, fuel, tool, push car dump, tool house material, waybill, fire hose, fire extinguisher, telephone, telegraphone, map, profile, powder, magazine, packing, grease, typewriter, armature, grocery, bar, vegetable, etc.

Cases: medicine, caboose, stationery, track scale, instrument, boiler, water testing, bulletin, tariff, thermograph, pie carrier and relay shipping.

Signs: mile, tunnel portal, section, culvert, cattle guard, bridge, county line, property line, private track, highway crossing, whistling, slow, station, station one mile, yard limit, city limit, premium, no thoroughfare, flanges, derail, curve warning, engine stop, distance warning, impaired clearance, signal limit, distance warning, gasoline, no smoking, switch signal, street closed, no pumping, and stop.

In framing lumber for buildings, the engineering department furnishes detailed plans from which the mill prepares a list of all the pieces to be made, following which each piece is marked in accordance with a master list so that the field forces can quickly identify the different pieces in a building and lose no time in placing them. This mill work cuts down the cost of lumber, but is equally serviceable in assuring speed of delivery where quick construction is required. Through a system of cost records handled on a job basis, the operations are conducted in a way to afford accurate preliminary estimates of the cost of millwork and an equally close check on the ultimate cost and rapidity of performance.

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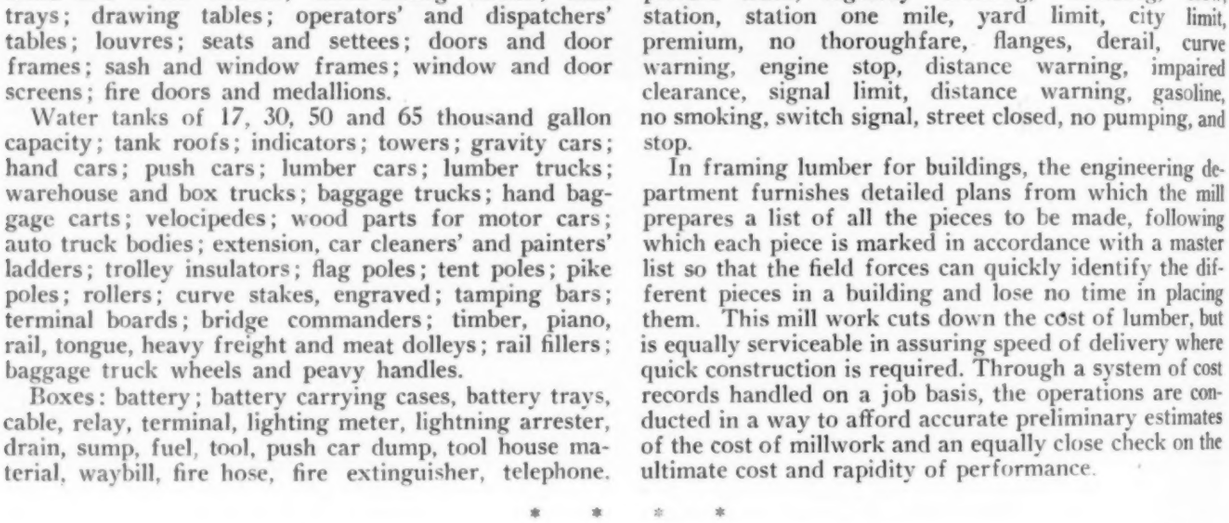


East End of C.P.R. West Toronto Yard

David Crawford Elected President of Pullman Company

Former executive vice-president and associate of E. F. Carry, late president, selected to head operating unit of Pullman organization

DAVID A. CRAWFORD, executive vice-president of the Pullman Company at Chicago, was elected president at a meeting of the board of directors at New York on May 2, succeeding Edward F. Carry, who died on April 24. Mr. Crawford was also elected president of Pullman, Inc., a holding company created in 1927 to direct the affairs of both the manufacturing and carrier companies.

Mr. Crawford's selection as president of the operating unit of the Pullman organization climaxes a period of 22 years service with railway equipment manufacturing and operating companies. Starting his early career as an instructor at the University of Wisconsin, he soon forsook this academic occupation and left Madison, Wis., to become secretary to Mr. Carry, who was then vice-president of the American Car & Foundry Co. at Chicago.

David A. Crawford

The business careers of the past president and the new president of the Pullman Company have been closely linked ever since that time. When Mr. Carry left the American Car & Foundry in 1916 to become president of the Haskell & Barker Car Company, Mr. Crawford was selected as the latter company's vice-president. Some six years later, when the Haskell & Barker Company was purchased by Pullman, and Mr. Carry was elected president of the Pullman Company, Mr. Crawford was named as vice-president of the parent organization. In 1924, when the activities of Pullman had increased to such an extent that a need arose for a segregation of the manufacturing and operating departments, Mr. Crawford was placed in charge of the manufacturing functions as president of the newly organized Pullman Car & Manufacturing Corporation.

Mr. Crawford has been associated with the operating unit of Pullman, as executive vice-president, since November, 1928. His selection as president of that unit of the company seems only natural inasmuch as it was one of Mr. Carry's plans that he might in the near future partially retire from a number of his duties, assuming some such title as chairman of the board and leave the active management of the Pullman Company to Mr. Crawford.

Within the organization, Mr. Crawford's assumption of the presidency is looked upon with a feeling of security for the future welfare of the company. A knowledge prevails that he has, through his long association with Mr. Carry, a most complete understanding of his predecessor's policies and plans. It is also only natural that Mr. Crawford should have been selected since training for executive service in such a non-competitive type of business can for the most part only be obtained within the organization itself.

Mr. Crawford becomes the fifth president of the Pullman Company and its predecessor, the Pullman Palace Car Company. Since its establishment in 1863 by George M. Pullman that organization has had only four presidents, each of whom served an average of 16½ years. Without exception, each of the five presidents either practically "grew up" or had a long period of service with the company.

Among business associates the new president is known as having a keen "financial mind." He is characterized as being of a very modest and unassuming nature with a sincere dislike for pretense. At college he was known as an excellent student who accomplished his assignments without manifesting any of the attributes of the "grind". His tendency toward directness of speech is tempered by a well developed sense of humor.

Mr. Crawford was born at St. Louis, Mo., on April 1, 1879, though his parents were natives of Alabama. He attended the University of Alabama for one year and graduated from the University of Wisconsin in 1905 with the degree of bachelor of arts. After two years as an instructor there, he became secretary to the vice-president of the American Car & Foundry Co. Seven years later he was advanced to assistant secretary of that company and the Jordan Furnace Company. In 1916 he was elected treasurer and subsequently vice-president of the Haskell & Barker Company, where he remained until 1922 when

he was appointed vice-president and assistant to the president of the Pullman Company. Two years later he was shifted to the manufacturing unit and was elected president of the Pullman Car & Manufacturing Corporation. In November, 1928, he became executive vice-president of the Pullman Company, a position he held until his election to president. During his entire business life Mr. Crawford's headquarters have been at Chicago.

In addition to his connections with the Pullman Company, Mr. Crawford has been for a number of years vice-president and treasurer of the Rich Tool Company of Illinois and during 1928-1929 he was president of the Rich Tool Company of Maine. At the present time he is a director of the Wilcox-Rich Corporation of Detroit (Mich.), the Harris Trust & Savings Bank and the Pullman Trust and Savings Bank of Chicago.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading amounted to 1,051,728 cars in the week ended April 27, an increase of 88,721 cars as compared with the total for the corresponding week of last year and an increase of 30,152 cars as compared with that for 1927. Ore traffic contributed the greater part of the increase over the total a year ago but loading of all commodities, with the exception of grain and grain products, was larger than in either 1928 or 1927. Loading in all districts was larger than in the corresponding week of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday April 27, 1929.

Districts	1928	1927	1926
Eastern	251,719	231,878	238,631
Allegheny	217,804	197,473	207,070
Pocahontas	58,170	52,597	63,208
Southern	151,578	142,993	159,135
Northwestern	151,209	123,370	149,922
Central Western	139,867	138,247	134,190
Southwestern	81,381	76,449	69,420
Total West. Dists.	372,457	338,066	353,532
Total All Roads	1,051,728	963,007	1,021,576
Commodities			
Grain and Grain Products	36,828	43,256	43,154
Live Stock	31,069	29,899	29,456
Coal	168,924	156,666	162,069
Coke	12,565	10,505	11,161
Forest Products	71,726	63,890	70,671
Ore	54,126	14,058	49,104
Mdse. L.C.L.	263,768	259,392	260,236
Miscellaneous	412,722	385,341	395,725
April 27	1,051,728	963,007	1,021,576
April 20	1,004,156	945,289	950,545
April 13	971,730	912,659	949,561
April 6	956,364	919,352	953,907
March 30	967,029	948,743	986,462
Cumulative total, 17 weeks	16,130,658	15,532,503	16,416,714

The freight car surplus averaged 244,245 cars during the period ended April 23, as compared with 258,253 cars on April 15. The total included 113,368 coal cars, 84,462 box cars, 25,481 stock cars and 12,551 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 27 totalled 67,930 cars, an increase over the previous week of 2,310 cars and an increase over the same week last year of 4,211 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
April 27, 1929	67,930	44,311
April 20, 1929	65,620	44,136
April 13, 1929	64,291	44,168
April 28, 1928	63,719	41,390
Cumulative Totals for Canada		
April 27, 1929	1,066,442	737,157
April 28, 1928	1,058,609	677,340
April 30, 1927	1,025,770	661,836

National Safety Council's Railroad Safety Trophies

THE National Safety Council has announced its awards of plaques for the year 1928 in its contest, announced two years ago, for the best record for safety to employees, among Class I railroads, on the basis of casualties to employees on duty per million man hours (excluding employees in Marine departments) and the winner in Group A is the Southern Railway, on which the rate for 1928 was 8 per million man hours. The Southern has a very active safety organization and conducts safety contests with marked enthusiasm. Permanent trophies of artistic merit are awarded by the road annually to different departments or divisions and pictures of several of these artistic productions are reproduced in the present report.

For the purposes of the contest, the Class I railroads are divided into seven groups, in accordance with their respective man-hour exposure, as follows (*millions* of man hours):

Group A, 100 or more; Group B, 50 to 100; Group C, 20 to 50; Group D, 10 to 20; Group E, 5 to 10; Group F, 2 to 5; Group G, less than 2. No railroad is eligible to win a group award more than twice in succession, which apparently accounts for the absence of the Union Pacific in the tables shown in the present announcement.

Henry A. Reninger, president of the National Safety Council, in announcing the awards and congratulating the railroads and their employees, says that all Class I railroads have shown a continued reduction in total casualty rates, as compared with 1923, the year in which this series of records was begun. The total cumulative reduction in casualties during the five years following 1923 amounted to 181,454. The fatality rate per million man hours in 1928 was 0.28 as compared with 0.37 in 1923.

Group B—the winner in this group was the Texas & New Orleans (Southern Pacific) with a total casualty rate of 8.91. This road has made a reduction of 60.51 per cent as compared with 1923.

Group C:—Oregon-Washington Railroad Navigation Company (Union Pacific); total casualty rate 4.63, a reduction of 60.49 per cent since 1923.

Group D:—Chicago Great Western, rate 3.30 a reduction of 75.70 per cent from 1923. This road has ranged second in its group for the four years preceding 1928.

Group E:—Gulf, Mobile & Northern; rate 3.15, a reduction of 89.80 per cent from 1923. In connection with this road, Mr. Reninger's circular says that this is the best record in the country for roads of its size, for the year 1928. The general manager is specially commended for his personal interest in the accident records.

Group F:—Ann Arbor (Wabash); rate 2.81, a reduction of 90.91 per cent since 1923.

Group G:—Texas Mexican. This road has only been in Class I two years and it has gone through both of these years without a reportable accident. The number of man hours in 1928 was 1,223,000 and for the two years it was 2,933,000.

The Council makes special acknowledgment of the co-operation of the Pullman Company which is a sustaining member of the Council, and the record is given of the employees of that company. The Pullman group is divided into eight geographical zones, and the Chicago Central zone, reporting 14,540,988 man hours, stands at the head of the list with 81 casualties, and a rate of 5.57. In the whole of the Pullman record the number of man hours was 64,428,316; casualties 571, rate 8.86.

Passenger Train Service Again Speeded Up

Reduction of time to Northwest precipitates the tightening of schedules on several roads

WHEN the vacationists of 1929 begin their travels, they will be offered the fastest and most luxurious passenger service ever available in the west, involving the shortening of many schedules and the betterment of much equipment. These have culminated in the recent cut from 68 hours to 61¼ hours between Chicago and the Northwest, the lowering of the California schedules from 63 hours to 58 hours and the establishing of new 25-hr. services between Chicago and New York.

A reduction of time between Chicago and the Northwest had been sought by the people of that territory for some time and on February 9, at a meeting of railroad presidents, mayors and other persons at Portland, Ore., the Pacific Northwest appealed to the railroads for a 60-hr. passenger service from Chicago. The action was precipitated by the establishment of a 61¼ hour service from California to Chicago on May 6, 1928 to replace 70-hr. schedules. A short time after the Portland meeting the Great Northern announced that it would reduce the running time from 68 hours to 63 hours during the early summer. All railroads operating passenger service from Chicago to the Pacific Northwest then made the same reduction. This announcement of the Great Northern was supplemented on April 29 by another, to the effect that a new train, the "Empire Builder", would be put into service between Chicago and the Pacific coast on June 10, on a 63-hr. schedule. Similar schedules, effective June 9, were decided upon by the Northern Pacific and the Chicago, Milwaukee, St. Paul & Pacific. On May 1 the Union Pacific announced a 62¾-hr. schedule westbound and a 61¼-hr. schedule eastbound between Chicago and Portland and Seattle, effective June 9, without extra fare. This further reduction was met by the other lines.

The Empire Builder of the Great Northern consists of 8 new trains, involving an expenditure of over $4,000,000 and by 11 locomotives, 4 of which will be coal-burning, 6 oil-burning and 1 electric. A sun-parlor observation car will be included, in which the familiar observation platform gives way to a sun parlor; beyond that is an observation lounge, with tables, writing desks, chairs and settees; a women's dressing room with both shower and tub baths; a buffet kitchen and fountain; another spacious parlor for smoking and card-playing; and a barber shop and men's baths.

Sleeping cars will have larger dressing rooms than the ordinary Pullmans, with many minor refinements in detail, while the distinctive features of the dining cars include electrical refrigeration and electrical dishwashing machines. Striking innovations also have been employed in the interior decoration and furnishing of the new equipment.

The cars will bear the names of pioneer explorers, soldiers and statesmen, such as John Jacob Astor, John McLaughlin, who built Ft. Vancouver, Alexander Ramsey, Minnesota's early governor, General Phil Sheridan, William Tecumseh Sherman, Nelson A. Miles, George A. Custer, Henry Leavenworth and Wesley Merritt.

The Northern Pacific, with the inauguration of the faster transcontinental running time on its North Coast Limited, will operate two trains daily between Chicago and the North Pacific cities. The Comet, which heretofore operated in the summer park season between Chicago and Yellowstone National Park only, will become a through Chicago-Pacific Coast train. Leaving Chicago at 10:45 a.m., this train will be operated as two trains west of St. Paul, the Comet continuing to the Pacific Coast and the Yellowstone Comet running only to Yellowstone Park.

Following this 6¾ hour cut to the Northwest, the Atchison, Topeka & Santa Fe, on May 4, announced that on June 9 it would cut the westbound schedule of its Chief, excess fare train, between Chicago and Los Angeles from 63 hours to 58 hours and the eastbound schedule from 61¼ hours to 58 hours, and continue an extra fare of $10. The Chief will leave Chicago at 11:15 in the morning instead of at 8:15 in the evening and will leave Los Angeles at 9:45 p.m., so as to arrive in Chicago at 9:45 a.m., and thereby make connections with eastern trains. The running time of the California Limited will be reduced to 63 hours westbound and 61¼ hours eastbound. The Second California Limited will be known as the Grand Canyon Limited, and will be operated via the Canyon.

The Chicago, Rock Island & Pacific and the Southern Pacific, commencing on June 9, will continue to operate the Golden State Limited between Chicago and Los Angeles on a schedule of 63 hours westbound and 61¼ hours eastbound, but without the extra fare of $10.

The Union Pacific has also decided upon a 58-hr. schedule. And the San Francisco-Overland Limited will be known as the Overland Limited and will operate as an extra fare train on a 58-hr. schedule. A new train, the "San Francisco Limited", will be established between Chicago and San Francisco on a 63-hr. westbound and 61¼-hr. eastbound schedule. After June 9, the Los Angeles Limited of the Chicago & North Western—Union Pacific will be operated on a 63-hr. schedule westbound and a 61¼-hr. schedule eastbound with no extra fare. The 61¼-hr. schedule from California to Chicago was first put into effect by all roads on March 4, 1928.

Coincident with these changes is a 1-hr. 35-min. reduction in running time from Chicago to Denver, Colo., or from 27-hr. 25-min. to 25-hr. 50-min. This new time will apply on the Denver Limited of the Chicago, Burlington & Quincy, the Denver Special of the Union Pacific and on trains of the Chicago, Rock Island & Pacific and the Atchison, Topeka & Santa Fe.

Another important recent development in passenger transportation has been an improvement in service between Chicago and the east. Effective April 28, the "Wolverine" of the New York Central between New

York and Chicago, by way of the Michigan Central, was placed on a 21-hr. schedule, which is a reduction of one hour. A new coach train, decorated in special colors, the "Niagara Falls De Luxe," was placed on a 10½-hr. running time between Buffalo and Chicago. The time of train No. 4 and its companion No. 15, between Chicago and Detroit over the Michigan Central, was reduced to six hours.

On April 28, the Pennsylvania established a new train, the Rainbow, between Chicago and New York on a schedule of 20 hours and 50 minutes. The train was dedicated to the Rainbow (Forty-second) division of the A. E. F. It leaves Chicago at 3 p. m. and arrives in New York at 12:50 p. m. the following day. A new train, which connects with it at Mansfield, Ohio, leaves Detroit at 6:50 p. m. On the same date, the Red Knight, another new train, was established between New York and Chicago. This train leaves New York at 10:45 p. m. and arrives in Chicago at 7:35 p. m. the next day.

The Erie, on June 2, will put on the "Erie Limited", an express train, to run between New York and Chicago in 25 hours. This train will leave New York in the morning and will take the place of the Southern Tier Express, which goes on farther than Jamestown and Buffalo.

The New York, Chicago & St. Louis has added train No. 4 between Chicago and New York on a 24-hr. 20-min. schedule. The train leaves Chicago at 6:10 p. m., Central Standard time and arrives in New York at 7:30 p. m., Eastern Standard time.

The New York Central has made several other changes besides those noted above. The "Knickerbocker" has been established between St. Louis and New York. It carries a section lounge car, of new design, between Chicago and New York. The Cleveland Limited has been placed on a schedule one hour, 10 minutes quicker than the present schedule between New York and Cleveland. The train carries a sleeping car from New York for Chicago which is attached at Cleveland to the Lake Shore Limited so as to reach Chicago in 21 hours from New York. A new service has also been provided between Pittsburgh and St. Louis and between Pittsburgh and Chicago. The "Fort Orange" has been established as a new train from New York to Utica. The Empire State Express between New York and Buffalo, has been placed on an 8-hr. 45-min. schedule, which is 15 minutes faster than previously. The "Ohio State Limited" now runs from Cincinnati to New York one hour faster than before.

The "Motor Queen", a coach train with cars decorated in a rich brown with gold stripes, and a stripe of fawn along the sides, is being run between Cincinnati and Detroit over the Cleveland, Cincinnati, Chicago & St. Louis and the Michigan Central, making the trip in 7 hours. The cars consist of a combination baggage-club car with movable leather upholstered chairs, two coaches with individual bucket-type seats, a dining-lounge car and an observation car with 52 upholstered chairs.

Additional changes on the Pennsylvania include a reduction in the time between Cincinnati and New York. The "Cincinnati Limited" runs through to New York in 17 hours, 5 minutes, about one hour faster than previously. A new train, No. 67, leaves New York at 10:45 p.m., Eastern Standard time, and arrives in Cincinnati at 5:35 p.m., Central Standard time. The schedule of the Spirit of St. Louis has been reduced 1 hour, thereby placing the train on 24-hr. running time between St. Louis and New York. New service from the south provides passengers from Birmingham, Ala., and intermediate points, with nearly five hours earlier arrival in New York than before. A new through sleeping car leaves Birmingham over the Louisville & Nashville and connects with the Cincinnati Limited.

The Pennsylvania, on April 28, reduced the running time of its Liberty Limited 15 minutes between Chicago and Washington. The eastbound running time of the Washington section of the Manhattan Limited was cut 55 minutes and that of the New York section 10 minutes. The eastbound running time of two other trains, the Gotham Limited and the Red Arrow, were cut a quarter of an hour.

New Oil Pump

THE S. F. Bowser Company, Fort Wayne, Ind., has developed a new form of pump for filling barrels with oil. The pump is automatic in that predetermined amounts of oil can be discharged into barrels without constant watching to prevent overflow. The device also measures the quantity of oil in terms of the number of packages or barrels filled. The new pump is designed for use where lubricating, transformer, engine and cylinder oils and liquids of similar characteristics are being barreled and can be set to measure and discharge either one of three different quantities, 30 gal., 50 gal., or 55 gal., with an additional pint when this is desired. When the quantity for which the mechanism has been set is pumped, the valve in the discharge automatically closes, stopping the flow.

In the mechanism is a temperature and specific gravity control for use where liquids of different temperatures and specific gravity give rise to the problem of compensating for expansion and contraction to insure accurate measurement of quantity. The meter on the pump records to 10,000 and then repeats. It cannot be set back by accident or manipulation. With one of these pumps, one operator can fill approximately 50 containers of 30-gal. capacity, 35 containers of 50-gal. capacity or 30 containers of 55-gal. capacity an hour.

The New Oil Pump

Air Brake Association Meets at Chicago

Address by J. M. Fitzgerald is feature of the convention program—Attendance over 900

THE thirty-sixth annual convention of the Air Brake Association, which was held in the Hotel Stevens, Chicago, April 30 to May 3, 1929, inclusive, adjourned after voting to hold the convention next year in Minneapolis, Minn. The total registration of members and guests at the convention this year was 929.

W. W. White, supervisor air brakes, Michigan Central, was elected president of the association to succeed H. L. Sandhas, general inspector, Central Railroad of New Jersey. Other elections were as follows: First vice-president, W. H. Clegg, chief inspector, air brake and car heating equipment, Canadian National; second vice-president, R. M. Long, supervisor air brakes, Pittsburgh & Lake Erie; third vice-president, W. F. Peck, supervisor air brakes, Baltimore & Ohio; secretary, T. L. Burton, air brake engineer, New York Central, and treasurer, Otto Best, Nathan Manufacturing Company. The following members were elected to the Executive Committee: C. H. Rawlings, general air brake instructor, Denver & Rio Grande Western; E. Z. Mann, general mechanical instructor, Atlantic Coast Line; E. Van Bergen, general air brake, lubricating and car heating engineer, Illinois Central; J. E. Gardiner, general air brake inspector, Boston & Maine, and John P. Stewart, general air brake supervisor, Missouri Pacific.

The principal address of the convention was delivered by J. M. Fitzgerald, assistant to the chairman of the Committee on Public Relations of the Eastern Railroads, at the morning session on Wednesday, May 1. Following are abstracts of Mr. Fitzgerald's remarks and the paper on Slid Flat Wheels in Passenger-train Service.

The Price of Transportation Insurance

By John M. Fitzgerald

Assistant to Chairman, Committee on Public Relations, Eastern Presidents' Conference, New York

If someone with a team of horses, a motor car, or an airplane, should offer to move a ton of freight a distance of one mile for one cent, it would be regarded as an important news item; should a man propose to pack it on his back, or push it in a wheelbarrow for a penny, it would constitute a sensation.

It seems incredible that any transportation agency is able to transport one ton of freight a mile for one cent; but our railroads are actually doing it on an enormous scale. We lead the world in mass production and we must have mass transport, a national distribution requiring long distance transportation. There is no other method for rendering this service comparable with our railroads.

But in spite of the fact that our railways provide the most efficient and lowest-cost rail service in the world, we rarely think of them as one of our most important national industries. We do not think of them as the great consumers of the products of other industries; as large employers of labor; and as our largest corporate taxpayers. Instead, we insist on taking our railways for granted. We assume that we have always had them and we think of them in terms of past performance. We do not give sufficient thought to the demands we shall make upon them in the future.

Other industry is always ready to admit that efficient transportation is essential to the profitable operation of business; and they are generous in their praise of existing rail service. But they continue to regard railroads as supplementary and subordinate to their own operations; they think of them largely as an agency necessary to the success of their business.

If the volume of business declines, if profits of industry are unsatisfactory, there is an immediate demand that railroads make the first contribution to the correction of economic disturbance, by reducing freight rates—a subsidy at the expense of the railways. But what is more important is the fact that many of these rate reductions are being granted. The result is a serious loss of revenue to the carriers, and little or no benefit to those who seek them.

If the transportation facilities of today would be adequate next year and for all time, railways would have no obligation beyond the continued maintenance of the highest standard of rail transport. But we live in a country which has not yet reached the limit of its development; a land which will continue to grow in population and in products of industry. Therefore, railroads must anticipate the expanding needs of commerce and industry; they must not only maintain the efficiency of today, they must provide a still more efficient transportation machine for the future.

The improved service of rail carriers is the backbone of present prosperity. Not only has it permitted liquidation of inventories, but less merchandise is now being stocked, less money is being borrowed, and much less interest paid. An enormous volume of capital has been released and is available for still further expansion of commerce, and for permanent investment.

It is frequently stated that railroads should spend one billion dollars of new capital annually. We still think more clearly if we say, that the public interest demands these railroad expenditures. Failure of the railways to continue a policy of liberal capital expenditure will cause greater loss to the public than to the carriers.

The amount of new capital available for development of rail properties will depend upon the credit which railways are able to maintain; and their credit is naturally governed by earning power. This does not mean the earnings of a single month or a particular year but a stabilized earning power, earnings which insure the safety of principle, and afford reasonable hope for dividends.

It is conceded that rail rates must be fair and reasonable, that they must not be discriminatory, that they must be low enough to permit the free flow of our products. But they must also be high enough to yield a return upon

the investment devoted to the production of transportation service. A rate which barely covers the cost of producing service, and which does not deal fairly with the investor, is not a rate which insures the life of the enterprise. It is a well-known fact that a day's wage, or a unit quantity of most any article of commerce, will purchase a greater amount of rail transportation now than ever before.

Not only are railroads regulated in the public interest, but they are regulated by different governmental agencies. One branch of government endeavors to establish the highest possible value for railway property as a basis for railroad taxes; and another set of officers are trying to prove that the same property has little value in a rate proceeding. In other words, the efforts of both sets of officials tend to prevent the carriers from earning a fair return on either the highest or the lowest value claimed by any public authority.

In the meantime the public demands that ever increasing efficiency shall be accompanied by continued rate reduction. Wages and taxes continue to increase. The carriers are forced to share existing business with competitive transport agents which are subsidized with public tax monies. And the marvel of the situation is that, in spite of all these demands, railroads continue to render the highest standard of service, at the lowest cost, with the lowest capitalization, and with the greatest efficiency of any railroads in the world.

The "public interest" is always a partner, and it will be best served by a transportation system with a credit which will command the funds of the investor—a transport service which will not owe its existence to the tax payments of our citizens.

Slid Flat Wheels in Passenger Train Service

Contributed by The Pittsburgh Air Brake Club

While the question of wheel sliding in passenger train service has always been with us, during recent years, the inconvenience and expense connected with these epidemics has greatly increased because of the greater density of passenger traffic, the greater stress laid upon the importance of avoiding inconvenience or delay to passengers, the use of heavier and more expensive car equipment, the increasing use of roller-bearing journals, and the importance of preventing the tie-up of equipment necessary in order to repair wheels.

The methods of operation are being constantly changed with the object of making passenger service equipment yield higher returns per unit in the way of mileage per day. This pressure for higher operating efficiency makes the wheel-sliding problem particularly acute, even though it might be said that on the average proportionately less wheel sliding appears today than we have experienced in former years.

Causes of Wheel Sliding

The wheel sliding problem is primarily a winter problem. There are, of course, occasional instances of wheel sliding which occur in good weather conditions, but the so-called epidemics of sliding are usually encountered during the winter months. This is so because of the bad rail conditions which always occur in winter weather. These conditions are caused by frost, snow and ice and are unavoidable. They must be taken into consideration if wheel sliding is to be avoided. The tendency of bad rail condition is to reduce the static friction of contact between the wheel and the rail and when this friction drops to a lower value than that of the kinetic or moving friction between the shoe and the wheel, the wheel is apt to slide.

The effect of slack action in a train is often favorable to wheel sliding because the attendant shocks frequently cause wheels to pick up and slide. As the common expression describes it, "the cars are kicked-off their feet."

Many causes of serious wheel sliding have been traced to the switching of cars at terminals, where the cars are moved before the brakes have been properly released.

Low joints or undulation of the track are many times responsible for picking up one or more pairs of wheels on a car due to the fact that the load on the rail at the point of contact is momentarily reduced. This is particularly true of cars with six-wheel trucks.

Improper alignment or the wear of the rail on the ties frequently results in a point instead of a line bearing between the tread of the wheel and the rail head. This may cause a considerable reduction of the static friction between the wheels and the rail, thereby contributing to wheel sliding.

Passing over excessively rough crossings or switch frogs with brakes applied is a condition that may be favorable to the picking up of one or more pairs of wheels on a car.

Unequalized braking effort on the various wheels or axles of a car is frequently responsible for sliding. These inequalities are brought about by non-uniform piston travel adjustment, improper leverage ratios on the trucks or in equalizing levers, binding of levers and pull rods, overlapping or turned brake shoes and excessive false piston travel due to rigging deflection, lost motion in rigging connections and displacement of brake shoes under loads.

The wear and tear on brake equipment frequently develops defective brake conditions which are contributory causes of wheel sliding. The most common brake defects to which wheel sliding can be traced are stuck brakes, undesired quick action, the effects of moisture and freezing on the operation of the brake, and lack of proper synchronizing chokes in brake equipments.

Suggested Remedies for Wheel Sliding

If rail conditions are bad for any reason there is very little which can be done to correct them. They are a direct result of the weather. When bad weather prevails it is necessary for the engineman to take these conditions into account and exercise due caution. As a general rule the engineman must be instructed to consume more time for making the average stop, avoid the use of high cylinder pressures at low speed, and use no sand near the end of a stop.

Slack action in trains produces shocks which at low speed are particularly apt to contribute toward wheel sliding. This is a phase of train operation which is extremely complicated because it involves so many factors, such as free slack, variation of braking power, variation of lading, handling of brakes, etc.

A large amount of false piston travel (say 3 inches or more based upon the difference between standing full service and running full service piston travel) caused by excessive deflection of brake rigging and truck members, is a condition which accentuates slack action at medium speeds with light brake pipe reductions and consequently may be a factor in wheel sliding. The remedy is adequate brake-rigging and truck maintenance, or suitable corrective changes where this fault can be traced to bad design.

In practically every case slack action exists to some degree and its complete elimination, if not impossible,

is at least improbable. It is, therefore, up to the engineman to handle the brakes so as to reduce it to a minimum, especially at medium or low speeds. This can be best accomplished by graduating the brakes both on the application and release.

There are many points on railroad systems where trains are broken up and reassembled into new make-ups. This work usually must be done in the shortest time possible. This means that the switching must be handled promptly and frequently cars are moved before the brakes are released. Such movements of cars, even though the distances are short, are apt to be very damaging, because of the practice of using sand for starting at terminals.

The failure of cars to release promptly when switching is brought about by two causes: first, variation in feed valve setting on the switching locomotive as compared with road locomotives; second, the possibility of over-charged cars on yard plants. It is of greatest importance that the feed valve adjustment on switching locomotives and yard plants should agree with that of the road engines within reasonable limits.

Neglect of feed valve maintenance often results in reduced capacity which may increase the difficulty of releasing the brakes on cars to be switched. Different rates of leakage in car equipments and different types of brakes may develop conditions under which certain cars are more easily released than others. When a switch engine couples on to such a string of cars the crew will hear the first few cars release and may assume that all cars are released when such is not the case. Switching crews should be thoroughly instructed concerning the importance of having the brakes on all cars released before movement.

Defective track conditions, such as low rail or improper setting of the rail so as to cause a poor contact between the rail head and the wheel, are conditions which are more apt to occur in winter because it is much more difficult to secure proper track maintenance during that season. The only remedy is better track maintenance. But this factor can be largely offset and made of relatively small importance if the other factors here discussed are properly corrected.

The use of water pans frequently cause very bad rail condition in their vicinity during severe winter weather. Enginemen should be instructed to avoid any brake applications at such locations if possible, and when a brake application is required a light service reduction should be made to suffice.

Crossings and switch frogs should be given rigid inspection and prompt repairs during the bad weather season because when they become excessively rough the contact between the wheel and the rail may be disturbed sufficiently to cause wheels to slide.

The proper testing and inspecting of trains at the terminal test will afford the best opportunity of detecting defects which may contribute to wheel sliding. The instructions covering the release of brakes during the terminal brake test require that each brake must be inspected and known to release promptly.

The letter of these instructions is sometimes ignored when the time available for testing is short, the trains are long and the test crew is reduced for any cause. Laxness in the inspection of brakes under terminal test is apt to be costly, especially during severe winter weather.

The primary cause of wheel sliding epidemics is bad rail conditions which all will agree are unavoidable at times during the winter season. Under the circumstances it is only logical to expect the engineman to keep them in mind and make such changes in his methods of train handling as will reduce the probability of sliding to a minimum.

Brake Manipulation Is Important

It is too much to assume that one method of brake manipulation will suffice for all seasons of the year. This fact is illustrated by the analogy between motor car handling and train handling. Experience has taught how a motor car should not be handled when operating on a frosty or icy pavement.

A fundamental requirement of brake manipulation that will offset bad rail conditions and other factors conducive to wheel sliding, is to graduate both the application and the release. A partial brake application at the start will serve to gather the slack gently, and bring the train into condition to stand a heavier or full service application with a minimum danger of sliding. The graduated release of the brake is desirable because it will avoid high brake cylinder pressures near the end of the stop when speed is low and the danger of wheel sliding is greatest.

Discussion

One of the members, in the discussion of this paper, spoke of the need of giving greater attention to the design of passenger cars, especially in the location of water drips, steam-heat traps, water pipes on dining cars, and toilet traps. Quite often, he said, passenger cars came to his attention on which pipes for draining water were located so that the water was discharged directly ahead of the forward wheel of the truck. Several speakers stressed the need of giving proper instruction to enginemen in the manipulation of the brake valve to meet the exigencies due to bad rail conditions, especially during winter seasons. Too many enginemen, it was pointed out, were inclined to follow the letter of the rules pertaining to train handling at the sacrifice of good judgment. One of the members stated that in his opinion the two-application stop was one of the important sources for slid-flat wheels. He favored the use of the one-application stop in preference to the two-application stop, because there was a tendency to apply the brakes too long when making the second application. Making a partial brake application at the beginning of the stop, especially in bad weather when the rails are wet, takes up the slack without shock, and reduces the speed of the train so that a full service application will bring the train to a stop without danger of sliding the wheels.

* * *

Approach to Altoona, Pa., Station on the Pennsylvania

Roads Agree to Reduce Export Grain Rates

WASHINGTON, D. C.

PRESIDENT Hoover's request or suggestion that the railroads make an emergency reduction in the export rates on grain to facilitate the immediate exportation of the great accumulation of wheat on farms and in elevators in the West has promptly developed complications which appear likely to require that the roads make greater sacrifices than were originally contemplated.

At a meeting of presidents and traffic executives of the principal eastern railroads in Washington on May 2, convened at the instance of the President and members of his Cabinet, it was decided to put into effect a temporary emergency reduction in the rates from St. Louis, Chicago and Lake Erie ports to the north Atlantic seaboard, to expire by limitation on September 30, and it was announced that similar action was expected from the western roads. However, before the eastern lines could complete the necessary steps to obtain authority from the Interstate Commerce Commission to make the tariffs effective on one day's notice, and before the western roads had acted in the matter, so many protests were made to the commission as to the competitive effect on the flour milling interests and the operators of vessels on the New York Barge canal and the Lakes that the western roads, meeting in Chicago on May 7, decided to reduce their rates both on wheat and wheat flour and the commission called an informal conference of all interested parties to be held in Washington on May 9.

The western roads announced their reductions after the meeting on May 7, following a conference with the commission on May 4, and before the commission had called its conference the eastern roads had arranged for a meeting in New York on May 9 to consider the new developments.

Western milling interests had protested against the proposed reductions on export wheat, unless accompanied by similar reductions on flour, on the ground that they would result in additional exportation of wheat for milling abroad at the expense of flour exports. Operators on the New York Barge Canal, who have been competing with the railroads on a waterway provided by taxation, complained that the rail reductions would subject them to a ruinous competition, and other protests were made on the ground that the rail reductions would divert traffic from lake carriers.

Both the eastern and western roads in their announcements made it plain that they were proposing rates lower than would be justified under ordinary conditions. for the purpose of co-operating with the administration in a program for relieving an emergency in agriculture, and it is understood that they had previously been conferring with the commission on the necessity of some such step to relieve both the operating and market conditions which might result from the accumulation of the hold-over grain when an abnormally large new crop is ready for market.

Efforts to induce the western roads to put into effect an emergency reduction in export rates, had been made by Governor Reed and Senator Capper of Kansas for some time and were considered at a recent meeting of western traffic officials at Topeka but without direct result. Later the Kansas City Southern took independent action by filing with the commission tariff schedules effective on May 25 reducing the proportional export grain rate from Kansas City Mo., to Texas and Louisiana ports from 30.5 to 23.5 cents per 100 pounds, with the concurrence of the Southern Pacific lines. President Hoover then requested the Secretary of Agriculture, A. M. Hyde, and the Secretary of Commerce, Robert P. Lamont, to confer on the subject with executives of the eastern and midwestern railroads and the request was conveyed to the other roads by Daniel Willard, president of the Baltimore & Ohio.

It is understood also that traffic officials of the eastern roads had discussed the matter with the Interstate Commerce Commission.

Following the meeting in Washington on May 2, Robert N. Collyer, chairman of the Traffic Executive Association, Eastern Territory, authorized a statement explaining the action taken and emphasizing that the rates are to be regarded only as emergency rates. He said that the grain now accumulated, together with the abnormally large crop maturing and which will soon be ready for market, must meet the competition of the unusually large carry-over and production in foreign countries, with consequent lowering of the price level in the principal markets of the world.

A recent statement issued by the Car Service Division of the American Railway Association had pointed out that figures reported to it covering stocks of all grains at the principal primary markets, at Buffalo and at ocean and gulf ports, as of March 30, showed a total of 180,716,000 bushels in elevators and 14,732,000 bushels in cars and boats, a total of 195,448,000 bushels, as compared with 130,638,000 bushels in elevators and 8,293,000 bushels in cars and boats last year, or a total of 138,931,000 bushels, in addition to twice as much grain in interior markets of the Southwest as last year.

"As a result of studies by the Department of Agriculture and individual investigations by the railroads based upon the representations of that department, the railroads recognize that an emergency of national proportions exists necessitating every possible aid to the immediate removal of this surplus out of the country," Mr. Collyer said.

"The rates of the Eastern railroads applicable to export grain have been recognized by the commission and are shown in the current investigation of export grain rates under Docket 17,000, Part 7, to be on as low a basis as justified. In consenting to extend their aid to agriculture in meeting this great emergency prior to the movement of the new crop, the eastern railroads feel that general public recognition must be given to the fact that rates on grain lower than their present export rates would be far less than can be regarded as reasonable rates and should not, in justice to these carriers, be referred to hereafter as constituting a fair measure of export rates on grain.

"The eastern railroads have taken this action with the hope that the owners of the grain, the United States Shipping Board and steamships serving United States ports as well as other agencies involved in the handling of export grain will cooperate and do their part toward relieving the serious condition that is confronting the farmers of the United States.

"It is also expected that the Department of Agriculture will so revise its regulations with respect to the grading of grain as to place United States growers and exporters on as favorable a basis as shippers using Canadian ports."

W. W. Atterbury, president of the Pennsylvania, also conferred with the President on the subject at the White House on May 2, after which he issued a statement saying that the railroads in the East had been largely guided

by the wishes of the President and his Cabinet and are hopeful "that the action taken will be taken as it is intended—that is, as a friendly effort of co-operation to solve the difficulty with which the farmers are confronted." Such action is taken at this early period, he said, in order that it may be effective and the railroads are co-operating to stimulate exports in order that there may be a clearance of storage space in preparation for the new crop.

Gratification that the railroads had been willing to make the concession was expressed at the White House, where it was stated that the President hoped that the reductions would help to start the export movement. Secretary Hyde also gave out a statement announcing that the roads had decided to make the reductions and referring to them "as a practical demonstration of co-operation between the administration and the railroads in aid of the farmer and the orderly marketing of the coming crop." He added that similar action was expected from the western railroads.

Senator Capper added his contribution to the subject by expressing an opinion that the reductions would be made permanent. He had previously written a letter to Chairman Couzens of the Senate committee on interstate commerce urging an early hearing on his resolution to direct the Interstate Commerce Commission to investigate the export grain rates with a view to meeting the competition of Canadian rates.

The reductions proposed by the eastern roads were two cents per bushel in the rates on grain "at and east" of United States lower Lake Erie ports to north Atlantic seaboard; from 22½ cents to 17 cents per 100 pounds in the all-rail reshipping rates on grain from Chicago to New York, and from 26½ to 20 cents per 100 pounds in the all-rail reshipping rate from St. Louis to New York, retaining present relationships to other north Atlantic ports.

On May 4 Agent W. S. Curlett on behalf of the eastern roads, filed with the commission an application for sixth-section permission to publish on one day's notice rates on ex-lake grain for export from Buffalo reduced by 3.3 cents per 100 pounds with "corresponding reductions" from other ports. On May 7 an amended application was filed proposing to apply a reduction of 3.3 cents from all lake points, from Detroit, Mich., to Oswego, N. Y., inclusive. It was stated that complete information had not yet been received covering all the proposed reductions.

In announcing this fact on May 7 and inviting all parties having an interest in the situation to present their views at the proposed conference the commission said:

"Numerous protests have been received from operators of vessels on the New York Barge Canal and from officials of New York State to the effect that the establishment of the reduced rates by rail will create ruinous competition for vessels on the canal, in contravention of section 500 of the Transportation Act, 1920, which directs the Commission to maintain both rail and water transportation in full vigor. The application proposes no change in the rates on grain products. The rates on the latter are now higher than on grain. Numerous protests have been received against permitting any reduction on grain without like reductions on grain products, it being contended that undue prejudice and preference in violation of section 3 of the interstate commerce act would result therefrom. In the past there appears to have been a more or less recognized relationship between the ex-lake rates from lake ports and the all-rail rates from inland grain markets, such as Chicago, St. Louis, Peoria and Kansas City, to the north Atlantic ports and to Gulf ports. Protests have been received against making effective reductions in the ex-lake rates without corresponding reductions in other competitive rates on grain and grain products."

Meanwhle, the price of wheat has been falling and there is talk of similar reductions in rates to be made by the Canadian roads.

Western railroads on May 7 signified their willingness to assist the Hoover administration in its efforts toward farm relief when a new rate schedule on wheat and wheat flour for export, related commodities excluded, was adopted for the territory. It gives shippers a reduction of six cents per hundred pounds on wheat from the Missouri river to Chicago and also from the Missouri river section to the Mississippi river and from St. Paul and Minneapolis to Chicago; a reduction of 11½ cents per hundred pounds on shipments from the Missouri river to the Gulf and a reduction of five and one half cents a hundred pounds from St. Louis to New Orleans. The new rates, subject to the approval of the Interstate Commerce Commission, are issued with the understanding that they shall expire on September 30, 1929. The new rates made by the western roads are as follows: from the Missouri river to Chicago, 11½ cents per one hundred pounds; to the Mississippi river, seven and one half cents per one hundred pounds; from St. Paul and Minneapolis to Chicago, seven cents per one hundred pounds; from Omaha to the Gulf, 20 cents per one hundred pounds; from Kansas City, St. Joseph, Atchison and Leavenworth to the Gulf, 19 cents per one hundred pounds; from Minneapolis to Duluth, four cents per one hundred pounds; from Omaha and Sioux City to Duluth, 11½ cents per hundred pounds; from Kansas City, St. Joseph, Atchison and Leavenworth to Duluth, 13 cents per one hundred pounds; from St. Louis to New Orleans, 12½ cents per one hundred pounds.

According to E. B. Boyd, chairman of the Western Trunk Line Committee, the position of the railroads is as follows: "Due to the large carryover from last season's wheat crop and the immediate prospects for a very large production this coming season, it has been urged that all interests involved, including the railroads, should assist in effecting a reduction of the surplus through exportation to avert, if possible, a lowering of prices and the western carriers are hereby contributing their full proportion of the aid suggested and desired." It is pointed out that the action of the western lines shall not be considered a precedent, nor as an admission by them that the rates today in effect are not reasonably low under existing laws. The new rate, the announcement states, "shall only be construed as indicative of the attitude of the carriers to assist the president of the United States in his program for relieving an emergency to the extent that these abnormal reductions in rates may help the situation."

IN THE FEDERAL COURT at San Francisco, Judge Frank H. Kerrigan, on April 24, granted the Western Pacific a temporary injunction to restrain the Southern Pacific from maintaining a spur track across the proposed right of way of the W. P. near San Mateo, Cal. The court ruled that the Southern Pacific had no right to build the spur without first seeking the Interstate Commerce Commission's approval inasmuch as the Western Pacific had on file an application for construction of a line in that vicinity. An earlier injunction restrained the construction of additional tracks by the Southern Pacific.

New Books

Music In Industry, by Kenneth S. Clark. Bound in cloth, 383 pages, 9 in. by 6 in. Illustrated. Published by the National Bureau for the Advancement of Music, 45 West Forty-fifth street, New York. Price $3.

Mr. Clark, who is a member of the staff of the National Bureau for the Advancement of Music, presents in this book a compilation of facts brought forth in a survey, made by the bureau, of musical activities among industrial and commercial workers. It was found that musical activities are being maintained in 679 establishments. Among these there are recorded 267 bands, 182 orchestras and 176 choruses, besides 133 plants where there is community singing and 273 which provide musical instruments for their employees.

Of particular interest to railroad men, however, is the chapter entitled "The Casey Jones Motif" where it is learned that railroads surpass all other industries in the development of musical activities among their employees. Bands are in ascendancy as favorites among these railroaders, although there were also found outstanding glee clubs and touring quartets.

The book is generously illustrated with photographs of various industrial musical organizations of the types under review. Following the discussion there is included the replies to the questionnaire upon which the survey was based.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Container Car Service—Co-ordination of Rail and Truck Facilities Provides a New Method of Handling Less-Than-Carload Freight Shipments. Illustrated description of Pennsylvania's new services. 14 p. Pub. by Pennsylvania Railroad, Philadelphia, Penna., *Apply.*

The Hoch-Smith Resolution—The Contentions as to its Interpretation and Application, by Warren H. Wagner. 240 p. Pub. by F. M. Claflin, Washington, D. C., $5.

Regulation and Taxation of Motor Vehicles, by Ralph Budd. Discussion of bus operation in the United States and its effect upon the railways before Transportation Club of Toronto. 10 p. Publisher not given but probably available from Great Northern Railway, St. Paul, Minn.

Periodical Articles

Can Budget and Cost-of-Living Studies Be Used as Aids in Determining a Differential Wage? by Asher Achinstein. Statistics and geography considered. Journal of the American Statistical Association, March 1929, p. 28-39.

Les Chemins de Fer Coloniaux Africains, by Lionel Wiener. Railroads in Algeria, and their development with points as to the necessity of "railroads of penetration." Revue Economique Internationale, March 1929, p. 457-486.

The Container Rate Problem, by Fairman R. Dick. Brief history of modern container service development with summary of recent hearings on container rates. Savings Bank Journal, May 1929, p. 15-16, 65.

The Rainhill Locomotive Trials—Some Notes on an Historic Event, by C. F. Dendy Marshall, "...a prize of £500 was offered for a locomotive engine 'which shall be a decided improvement on those now in use' . . . Fifty locomotives had been built in England; two in Germany, which would not go; and one, a mere model, in the United States...[This was in 1829] The conditions laid down by the directors were printed on a card. To summarize them: The engine had to consume its own smoke; have two safety valves, one locked up; be on springs; and not to exceed 6 tons in weight and £550 in price." Modern Transport, April 27, 1929, p. 4.

Looking Backward

Fifty Years Ago

The Chicago & Pacific [now part of the Chicago, Milwaukee, St. Paul & Pacific], extending from Chicago to Byron, Ill., 88 miles, was sold under foreclosure proceedings to a committee of bondholders for $916,100. The cost of construction of the road was about $1,500,000, with considerably more than $100,000 expended for purchase of equipment.—*Railway Age,* May 8, 1879.

The sudden retirement of Commodore Vanderbilt from the Wabash and the accession of Jay Gould to its control were followed last week by announcements that Mr. Vanderbilt had secured a controlling interest in the Chicago & North Western and would make it the collector of business for the Michigan Central, the Lake Shore & Michigan Southern and the Canada Southern, feeders of the New York Central.—*Railway Age,* May 8, 1879.

The Lake Shore & Michigan Southern [now part of the New York Central] report for 1878 shows results in operation which have hardly ever been surpassed on any American railroad. Its average expense per passenger per mile during that year was 1.1o6 cents. Several other railroads reported a lower expense for handling freight, which in the case of the Lake Shore was 0.474 cents per ton per mile. The average train load has decreased from 69.2 passengers in 1870 to 58.4 passengers in 1878 while in those same years the cost of transportation dropped from 1.618 cents per passenger per mile to 1.166 cents.—*Railroad Gazette,* May 9, 1879.

Twenty-Five Years Ago

The Supreme Court of Appeals of Virginia has confirmed the demurrage rules promulgated by the Corporation Commission of that state. These rules, which go into effect on May 15, not only regulate demurrage but also require railroads to furnish cars to shippers within a certain specified time and to move all cars at a rate of 50 miles per day under a penalty of $1 per day.—*Railroad Gazette,* May 13, 1904.

A brief period of demoralization in passenger rates between Chicago and Minneapolis arising out of the competition over the traffic offered by the convention of a national organization which was to have been held at Minneapolis on May 10, resulted in a rate of $3 for the round trip from Chicago. Though internal dissension in the organization culminated in an injunction preventing the holding of the convention in Minneapolis, about 5,000 persons took advantage of the low rate, taxing the trains of the roads involved.—*Railway Age,* May 13, 1904.

Ten Years Ago

The executive committee of the American Railroad Association has created an additional section, to be known as Section VI, to consider and report upon all questions affecting the purchasing, selling, storing and distribution of materials and supplies. The section will include the former activities of the Railway Storekeepers' Association.—*Railway Age,* May 9, 1919.

The deficit incurred by the Railroad Administration not only continues to grow, but grows faster than even the most pessimistic have feared. It was $58,000,000 in March. This made the total deficit for the first three months of the year approximately $130,000,000, or almost one and one-half million dollars a day. The government's guarantees of standard return to the companies in these three months were $170,000,000. The net operating income actually made was only $40,000,000, or but 23 per cent of the guarantees.—*Railway Age,* May 9, 1919.

Odds and Ends of Railroading

Some months ago, this department announced the arrival of a son to Mrs. E. E. Hall of El Paso, Texas, on board a Rock Island train, the "Apache." The young man is doing splendidly, and has been christened Apache Hall, in honor of the train on which he was born.

The Louisville & Nashville again forged to the front in bowling, when A. Kast of the purchasing department and T. F. Strain of the accounting department, won the Kentucky state doubles championship. The champion five-man team was materially aided by another L. & N. man, Thomas Owen, editor of the L. & N. magazine, who crashed the pins for a 655 total in his three games.

If the 1,200,000 new railway ties, laid within the last five years by the Southern Pacific to provide new rail routes in northern California and Oregon, were piled together they would form a solid wooden tower 61,000 ft. high by 8 ft. square, or more than four times the height of the tallest mountain in the land and weighing over two hundred million pounds, according to G. W. Boschke, chief engineer.

Fiction Department

The championship for Restigouche salmon is claimed by Conductor S. B. Ham and Expressman Bert Sawyer, of the Maine Central, who report the catch of two salmon in the Aroostook river, weighing 38 and 42 lb., respectively.

Now You Tell One

The inquiring reporter wandered into a railroad terminal a few hours after a locomotive had crashed into a bumper, the bumper evidently getting the best of it. Observing a rather confident looking master mechanic surveying the wrecked locomotive, the reporter asked what was to be done. "That's easy," replied the master mechanic, "We have another locomotive over here which had its rear end smashed. We will cut the wreckage off the front end of this one and off the rear end of the other one, weld the two of them together and produce an articulated mallet type locomotive." Well, stranger things have happened in the welding industry.—The Welding Engineer.

A Graphologist

When it comes to the detection of crime by the study of handwriting, John M. Trendley, chief carload bill clerk of the Illinois Central at East St. Louis, Ill., ranks with the best of experts. Mr. Trendley has had experience in such celebrated murder cases as that of Albert T. Patrick, a New York lawyer, charged with the murder of William Rice, a Texas millionaire, and that of Roland B. Molineux, charged with the murder of Mrs. Katherine J. Adams. Mr. Trendley was also called in on the kidnaping case of Lloyd Keet, infant son of a Marshfield, Mo., banker, and he has appeared frequently in cases in St. Louis and East St. Louis courts, in one of which his handwriting testimony influenced a verdict for nearly $350,000.

A Most Necessary Excursion

Back in the days when railway financing was a simpler matter than it is now, the old Paducah & Gulf Railroad, now part of the Illinois Central System, had some bonds on which the interest was coming due. There was no money in the treasury, and bankruptcy would have been inevitable had not the resourceful management of the railroad hit upon the idea of running an excursion to raise the interest money. According to Col. W. T. McAdoo of Fulton, Ky., who was employed to run the excursion, some three hundred passengers were picked up along the line from Trimble, Tenn., to spend a day in Paducah, and the bond interest was successfully met. Benches on flat cars helped to accommodate the passengers. So well did Colonel McAdoo make out with the trip that he obtained regular employment with the railroad on that special type of service.

A Mermaid of the Rails

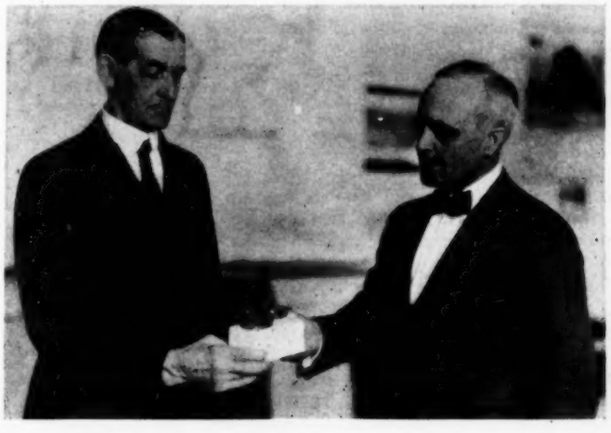
By capturing within the same hour national championships in the low spring-board diving and the 100-yard breast-stroke events, Jane Fauntz, 18-year-old daughter of C. F. Fauntz, assistant engineer in the Chicago Terminal Improvement department of the Illinois Central, recently added luster to an already excellent reputation as a swimmer. Her performance was all the more remarkable because the events were so widely different and because physicians and swimming instructors predicted about two years ago that her swimming career was ended when she injured nerves in her right arm in an automobile accident. Miss Fauntz was a member of the American swimming team in the Olympic Games last year.

Takes Model To Spain

A mechanical picture of one of the Norfolk & Western locomotives will be one of the exhibits in the International Exposition to be held at Seville, Spain, during the spring and summer of this year. H. E. Llampallas, machinist, Roanoke shops, is the man who built the mechanical picture and is sponsoring its entrance among the exhibits of Spain and many foreign countries in the coming exposition. He built his model unaided, and during his spare time. Mr. Llampallas calls his model a "mechanical picture" because only half of the locomotive has been built. It is attached to a board, and the representation is carried out perfectly. In addition, the wheels will turn when propelled by an electric motor, giving the observer an accurate idea of the driving mechanism of an actual locomotive. The mechanical picture was made in accordance with and to the scale of the original drawings used in the construction of a real locomotive. The dimensions are in the proportion of 1½ inches to 1 foot. It is 8 ft. long and 2 ft. high. All of the metal, with slight exceptions, is the same kind as is used in the make-up of the locomotives now in service. After the model had been assembled, Mr. Llampallas painted the metal himself.

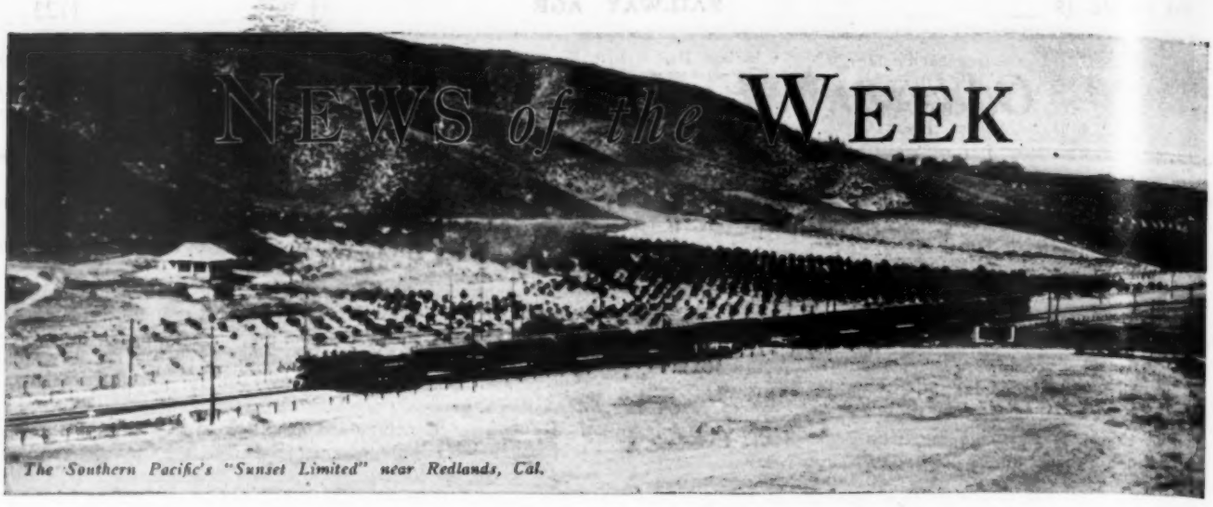
Telegrapher and His Key Retire Together

Two distinguished veterans of the Pennsylvania, forming a celebrated service team on the Sunbury division for almost a half century, have been reunited in retirement. The two veterans are E. B. Ludwig, retired block operator, and Bunnell telegraph key No. 23, both of Nescopeck, Pa. For 42



Superintendent Hudson (Right) Honoring the Two Veterans

years "Ed" Ludwig was first trick block operator at Nescopeck. During all of that time Bunnell Key No. 23 was his constant team mate in the work of handling railroad and commercial telegraphy in the tower. The "reunion of the veterans" took place in the office of B. H. Hudson, superintendent, who presented the key to the veteran as a tribute from the Pennsylvania to the rare service wrought by both.



The Southern Pacific's "Sunset Limited" near Redlands, Cal.

THE FREIGHT STATION SECTION of the American Railway Association is to hold its annual meeting at Denver, Colo., on June 18, 19, 20 and 21.

Labor Leaders Object to Consolidation Bill

A decision to oppose certain features of the Fess railroad consolidation bill, and especially to object to any effort to bring about its consideration at the special session of Congress, was reached at a recent meeting of the Association of Railway Labor Union Executives in Washington. Views of the labor executives as to provisions which they desire included in the bill will be presented to Congress by an executive committee assisted by Donald R. Richberg as counsel. Senator Fess has stated that he has no present intention of pressing the bill at the special session.

Storm Damages Railroad Wire Service in Illinois and Indiana

A severe storm with a wind velocity varying from 55 to 65 m.p.h., accompanied by a light snowfall on Thursday afternoon, May 2, created considerable havoc with railroad telegraph and telephone lines in northern Indiana and southern Illinois. The principal railroads affected were the Pennsylvania, the New York Central, the New York, Chicago & St. Louis, the Grand Trunk Western, the Erie and the Cleveland, Cincinnati, Chicago & St. Louis.

The Pennsylvania probably suffered more damage than any of the other roads in this territory, about 50 miles of pole line going down during the storm, with 2,146 poles and 1,280 miles of wire. The greatest damage occurred on the Fort Wayne division, between Liverpool, Ind., and Plymouth, 21 miles. Next in extent of damage was the section between North Judson, Ind., and Hebron, 13 miles, on the Logansport division. On the St. Louis division the damage extended from Smithboro, Ill., to the outskirts of East St. Louis, 11 miles. The railroad immediately pressed into service 24 gangs, totaling 568 men, and succeeded in restoring partial service on the day following the storm and temporary service on all circuits on the Logansport division on May 4, on the St. Louis division on May 5, and on the Ft. Wayne division on May 6.

On the Grand Trunk Western about 800 poles were broken and about 500 breaks in wires resulted. A force of 90 men succeeded in restoring temporary service by Sunday.

Western Railway Club Meeting

The Western Railway Club, at its annual meeting at the Hotel Sherman, Chicago, on May 6, elected H. P. Allstrand, assistant superintendent of motive power and machinery, Chicago & North Western, Chicago, as president for the ensuing year. Addresses were delivered at the meeting, which took the form of a dinner, by Walter W. Head, president, State Bank of Chicago, and Frank W. Noxon, secretary, Railway Business Association. Other officers selected were: L. R. Wink, assistant superintendent of car department, C. & N. W., Chicago, first vice-president; C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe, Chicago, second vice-president; J. W. Fogg, vice-president, MacLean-Fogg Lock Nut Company, Chicago, treasurer; W. J. Dickinson, Duntley-Dickinson Supply Company, Chicago, secretary. The new members of the board of directors are B. J. Farr, general superintendent motive power and car department, Grand Trunk Western, Battle Creek, Mich.; J. H. Nash, superintendent of motive power, Illinois Central, Chicago; J. H. Reisse, mechanical assistant to vice-president, Chicago, Burlington & Quincy, Chicago; C. J. Wymer, superintendent of car department, Chicago & Eastern Illinois, Danville, Ill.

Many Going to P. & S. Convention

The annual convention of the Purchases & Stores Division, A.R.A., to be held at the Palace hotel, San Francisco, on June 24-26, will be well attended, judging from the number of people making reservations on the special trains and reserving rooms at the San Francisco hotels. It appears that many officers, particularly those who have not visited in the West, will be accompanied by their families. According to the registration at present, there will be at least two sections, and possibly three, of the special train which leaves Chicago. These trains, which will be run over the Chicago & North Western, Union Pacific and Southern Pacific Lines, will be composed of all-steel cars, including club cars, drawing room, compartment and open section sleeping cars, dining car and observation car. They will leave Chicago at 6:10 p.m. June 19, with connecting cars leaving St. Louis at 7:30 p.m. and Minneapolis at 7:50 p.m. on the same day, and will arrive at San Francisco at 3:50 p.m. Saturday, June 22, stopping enroute for a sight seeing trip in Salt Lake City, and at Sacramento for an inspection of the Southern Pacific's shops.

At Sacramento the ladies will be given a sight-seeing trip through the city. Arrangements are being made for a sight-seeing trip by boat on San Francisco bay Sunday, June 23, and according to present plans, the evening of Monday, the first day of the convention, will be given over to dancing. G. W. Bichlmeir, general purchasing agent of the Union Pacific, is chairman of the transportation committee, while A. S. McKelligon, general storekeeper of the Southern Pacific, is chairman of the arrangements committee at San Francisco, assisted by F. W. Taylor, purchasing agent Southern Pacific, C. F. Post, purchasing agent Western Pacific, A. Moreton, purchasing agent Santa Fe, Homer Beach, *Railway Age*, and H. G. Cooke, representing, with others, railway supply manufacturers who are co-operating to make the convention a success.

Canadian Railway Committee Discusses C. N. R.

Reorganization of the top-heavy financial structure of the Canadian National and the Central Vermont receivership were among the subjects dealt with at last week's meetings at Ottawa of the House Committee which annually deals with the estimates of the Canadian National and the Canadian National Steamships.

Dealing with the financial reorganization Hon. Charles Dunning, Minister of Railways, told the Committee at one of its meetings: "We desire at the earliest moment to get this financial structure into shape."

It was also pointed out by Mr. Dunning that any writing down of the debt, particularly the wiping off of the debt due to

the government would not necessarily permit of any response to inevitable demands from the public for lower freight rates.

"We can," he said, "readjust this capital structure a long way before we can bring it within range of our present freight charges."

Speaking of the Central Vermont Sir Henry Thornton told the committee that the receivership would be lifted this fall and the property which formerly involved a financial loss to the Canadian National would become a profitable concern, he believed. It expected to have net earnings more than sufficient to meet all financial obligations. What they thought was a disaster two years ago when the Central Vermont was obliged to go into the hands of a receiver owing to the disastrous floods, had turned out to be a blessing in disguise. A very large interest of stockholders was shaken out when the company went into receivership.

Program for Superintendents' Convention

More than 400 persons have already made reservations on special trains which will leave St. Louis, Mo., at 2 p.m., on Friday, May 31, for the thirty-sixth annual convention of the American Association of Railroad Superintendents at Mexico City, Mexico. This party will travel by special trains provided by the Missouri Pacific and the National Railways of Mexico, stopping enroute at San Antonio and Monterey and arriving in Mexico City on Sunday, June 2. The convention party will leave Mexico City on the following Sunday, June 9, and return to St. Louis via San Luis Potosi, Tampico and Brownsville.

The tentative program is as follows:

TUESDAY MORNING, JUNE 4

Opening Exercises
Report of the president
Report of Executive and Advisory committee

TUESDAY AFTERNOON

Report of Transportation Committee on economies effected by larger motive power.
Address on Locomotive Inspection by A. G. Pack, chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, Washington, D. C.
Report of secretary-treasurer
Report of Interchange Car Inspection committee on the promotion of more prompt movement of trains through terminals.

WEDNESDAY MORNING, JUNE 5

Report of Train Rules committee on: (1) The elimination of Form 31 train order in non-block territory. (2) Protecting track hands and motor cars against trains.
Address on Safety, by Isaiah Hale, A. T. & S. F.

WEDNESDAY AFTERNOON

Acceleration of Freight Trains on Single Track, by B. H. Mann, Missouri Pacific.
Report of Committee on Railway Public Relations Work.
Report of committee on the Prevention of Grade Crossing Accidents.

THURSDAY MORNING, JUNE 6

Why Pullman Travel is Safe, by Harry Guilbert, director of safety, Pullman Company.
Report of committee on Plans to Enlist the Co-operation of Employees in Eliminating Waste.
Operating Aspects of Railway Water Service, by C. R. Knowles, superintendent water service, Illinois Central.
Report of Committee on relative merits of gross ton miles per tractive pound hour and of gross ton miles per train hour as a measure of economic performance.

THURSDAY AFTERNOON

Report of committee on Operation of Trains by Signal Indication and Remote Control Switches.
(a) Results of automatic block signals on Big Four, by C. F. Stoltz, C. C. C. & St. L.
(b) Remote control switches on the Southern Pacific, by P. Slater.
(c) Train operation by signal indication under centralized control on the Pere Marquette, by G. W. Trout.
Report of committee on car retarder operation: (a) In the Blue Island and Gibson yards of the Indiana Harbor Belt, by F. G. Swafford, general superintendent.—(b) At Markham yard, Illinois Central, by A. M. Umshler, superintendent of terminals.—(c) Method of operating at Clearing (Chicago) on the Belt Railway of Chicago, by G. J. Shreeve, general superintendent.
Report of committee on light traffic branch lines.
Report of committee on (a) The most desirable form of compiling daily statistical data on gross revenues and expenditures by the superintendent of a railroad operated under the departmental form of organization.—(b) The most desirable form of insuring accurate handling of cash fares and most efficient handling of tickets, by F. M. Brown, superintendent of the Pittsburgh & Lake Erie.

A Bill to Require Electrification in Illinois

Electrification of the railroads entering Chicago as proposed by the bill introduced into the lower house of the Illinois legislature by representative Harris B. Gaines at Chicago would cost more than a billion dollars railway officers stated at a hearing before a sub-committee of the House Utilities committee at Springfield, Illinois on May 8th. The meeting at Springfield was an adjourned session of the hearing which began at Chicago on May 6th when Frank Chambers, City Smoke Commissioner and other city officials urged electrification as a health measure.

Most of the speakers at Springfield emphasized the financial impossibilities of the railroad complying with a general statute covering all tracks in the Chicago Terminal area. Samuel H. Cady, General Solicitor of the Chicago and North Western said that the zone under discussion contained 7726 miles of track and all 40 of the railways entering Chicago to electrify would involve an annual interest charge of $50,000,000. without the creation of any new business with which to pay that increased expense.

As an example of the cost to an individual railroad Mr. Cady declared the electrification of the North Western in Chicago would require an expenditure of $125,000,000.00. Other speakers included representatives of the Wabash, The Grand Trunk Western, The Atchison, Topeka & Santa Fe, the Chicago, Milwaukee, St. Paul & Pacific, The Pennsylvania, The Belt Railway and the Chicago short line.

The bill would prohibit the operation of railroads in cities of over 500,000 population, by any power except electricity after January 1, 1932. It provides that the Illinois Commerce Commission may, after public hearing, extend the time, upon sufficient reason appearing therefor; but not for a longer period than five years from January 1, 1930. The penalty for violation would be payment of $1,000 a day by the offending railroad.

Air Brake Appliance Association Holds Extensive Exhibit

The Air Brake Appliance Association held its annual meeting at the Hotel Stevens, Chicago, Thursday, May 2, 1929, with Charles R. Busch (Buffalo Brake Beam Company) in the chair. The question of depriving associate members the privilege of voting was discussed, and it was decided that members of the association enrolled as associates should have all the privileges of the association but that of voting.

The following officers were elected for the ensuing year: President, R. F. Duysters (Simmons-Boardman Publishing Company); first vice-president, A. S. Lewis (Barco Manufacturing Company); second vice-president, H. A. Flynn (New York Air Brake Company), and secretary-treasurer, F. W. Venton (Crane Company). The newly elected members of the Executive Committee are: R. H. Jenkins (Nathan Manufacturing Company); S. A. Witt (Detroit Lubricator Company); Donald Charlton (Wilson Products Co., Inc.); E. H. Weaver (Westinghouse Air Brake Company); J. A. Galligan (Union Railway Equipment Company), and E. G. Busse (Chicago Railway Equipment Company).

A total of 58 manufacturers had equipment, products, or descriptive literature on display at the exhibit of the Air Brake Appliance Association, which is held in conjunction with the annual convention of the Air Brake Association. The following is a list of the exhibitors with their representatives:

Air Reduction Sales Company, New York.—Oxygen acetylene carbide cutting and welding torches and regulators; welded pipe joints. Represented by J. W. Kenefic, B. N. Law and R. T. Peabody.

American Hammered Piston Ring Company, Baltimore, Md.—Piston rings and literature. Represented by J. H. Meyers, J. A. Worthington and C. O. Hohn.

American Locomotive Company, New York.—Type G power reverse gear, Type G valve and Economy bell ringer. Represented by Robert Brown, Arthur Haller, Hunter Michaels, W. S. Morris, N. C. Naylor and M. D. Raymond.

American Steel Foundries, Chicago.—Reversible fulcrum brake beam for freight cars, adjustable brake head for passenger cars and various forged parts of Simplex clasp brake with case-hardened and ground pins and bushings. Represented by W. H. Baselt, J. H. Dore, A. H. Peycke, E. J. Simanec and W. C. Walsh.

Anchor Packing Company, Philadelphia, Pa.—Packing. Represented by W. J. Savage.

Ashton Valve Company, Cambridge, Mass.—Safety valves, steam and air gages, recording gages and gage testing devices. Represented by Chas. Gaston and J. F. Gettrust.

Barco Manufacturing Company, Chicago.—Power reverse gear, automatic smokebox blower fitting, metallic steam heat car connection, metallic engine-tender steam-air-water connections, flexible joints and lubricated plug valves. Represented by W. J. Behlke, C. O. Jenista, A. S. Lewis and C. L. Mellor.

Borden Company, Warren, Ohio.—Pipe threading and cutting tools. Represented by V. M. Gaspar and W. A. Phillis.

Brake Equipment & Supply Company, Chicago.—Air brake repair parts, B-4 instant release air valve and literature. Represented by L. E. Hassman, Harry Hayward, J. R. McClintock, B. Pratt, J. F. Pratt and C. J. Smith.

Buffalo Brake Beam Company, New York.—Auxiliary brake beam support, combination brake beams and bottom-rod support, side bearings and self-locking brake pins and brake-shoe keys. Represented by Charles R. Busch and E. F. Gladwell.

Byers, A. M., Company, Pittsburgh, Pa.—New process puddle ball and pipe. Represented by J. H. Ainsworth, C. A. Croft, C. W. Dannberg and F. W. Stubbs.

Chicago Railway Equipment Company, Chicago.—Model of brake beam safety guard, blue prints and literature. Represented by E. G. Busse.

Corley-DeWolfe Company, Elizabeth, N. J.—Ground joint unions, elbows, tees and reservoir unions. Represented by Ralph A. Corley.

Crane Company, Chicago.—Toilet room fixtures. Represented by H. J. Bartlett, J. C. Cole, John B. Jordan and Fred W. Venton.

Davis Brake Beam Company, Johnstown, Pa.—Brake beams, four-point brake-beam support and pressed-steel journal-box lids. Represented by Geo. W. Fox and Henry J. Melchert.

Dearborn Chemical Company, Chicago.—No-Ox-Id for preventing corrosion and feedwater treatment. Represented by Charles F. Barham, E. M. Converse, J. A. Crenner, H. B. Crocker, C. M. Hoffman, C. I. Loudenback, R. Q. Milnes and S. E. Moore.

Detroit Lubricator Company, Detroit, Mich.—Mechanical lubricator, automatic oil-feed adjuster, flanger oiler and hydrostatic lubricators. Represented by C. C. King, E. F. Milbank, C. E. Sperry and S. A. Witt.

Dixon, Joseph, Crucible Company, Jersey City, N. J.—Graphite lubricants. Represented by E.

(Continued on page 1130)

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Akron, Canton & Youngstown	Mar.	171	$320,681	$121	$331,631	$39,764	$32,960	$13,287	$78,768	$15,920	$180,699	54.5	$150,932	$131,911	$97,976	$56,168
	3 mos.	171	916,872	445	945,868	119,802	85,911	40,270	231,038	46,798	522,241	55.2	423,627	362,967	256,435	130,681
Atchison, Topeka & Santa Fe	Mar.	9,391	12,666,261	2,790,940	17,018,226	2,687,709	3,354,495	400,548	4,955,585	468,658	11,885,668	69.8	5,132,558	3,713,740	3,773,231	2,654,442
	3 mos.	9,391	35,788,755	8,767,643	48,758,951	6,512,244	9,898,964	1,248,338	14,845,387	1,364,139	33,895,193	69.5	14,863,758	10,595,599	10,863,689	7,692,860
Gulf, Colorado & Santa Fe	Mar.	1,944	1,851,957	173,588	2,171,257	558,879	423,683	54,349	700,193	69,046	1,783,943	82.2	387,314	294,835	187,579	46,600
	3 mos.	1,944	5,688,290	519,286	6,604,212	1,460,123	1,320,790	166,958	2,121,874	209,425	5,253,720	79.6	1,350,492	1,083,289	757,458	142,464
Panhandle & Santa Fe	Mar.	1,024	879,909	87,239	1,048,920	359,784	190,115	11,193	297,863	26,530	880,142	83.9	168,778	140,787	67,637	—28,293
	3 mos.	1,024	2,598,572	267,057	3,069,336	510,052	556,881	35,849	908,164	80,244	2,081,834	67.8	987,502	844,170	629,028	119,427
Atlanta & West Point	Mar.	93	158,689	48,728	240,900	30,408	44,146	11,988	109,871	14,642	215,276	89.4	25,624	12,087	—1,928	51,741
	3 mos.	93	452,208	147,815	701,934	81,426	128,655	36,771	281,249	42,584	584,357	83.2	117,577	74,493	38,556	110,849
Western of Alabama	Mar.	133	175,803	52,524	259,298	58,821	50,638	12,244	99,115	13,997	238,166	91.8	21,132	9,765	11,052	99,162
	3 mos.	133	480,214	161,901	726,526	134,014	154,761	37,496	262,402	42,848	643,102	88.5	83,424	40,874	46,142	244,888
Atlanta, Birmingham & Coast	Mar.	639	342,097	20,576	406,245	85,559	86,620	26,319	173,782	18,032	401,550	98.8	4,695	—12,317	—33,228	—9,198
	3 mos.	639	935,012	59,819	1,115,573	249,610	241,862	81,233	469,709	56,219	1,130,765	101.3	—15,192	—65,799	—107,006	—77,891
Atlantic Coast Line	Mar.	5,152	5,854,383	1,828,063	8,364,996	884,430	1,184,523	173,963	2,431,019	173,132	4,949,486	59.2	3,415,510	2,714,951	2,566,209	1,842,270
	3 mos.	5,147	15,360,233	4,962,235	22,246,268	2,559,040	3,282,922	523,488	6,756,695	532,830	13,926,416	62.3	8,319,852	6,415,249	6,149,800	3,830,317
Charleston & Western Carolina	Mar.	342	306,137	9,642	327,792	63,427	36,358	7,024	110,980	6,985	224,774	68.6	103,018	81,514	78,016	50,474
	3 mos.	342	760,208	30,519	822,586	188,374	106,896	21,498	299,558	19,615	635,936	77.3	186,650	122,146	123,243	80,209
Baltimore & Ohio	Mar.	5,639	17,134,654	1,761,706	20,253,323	2,328,721	4,225,987	539,690	6,982,077	674,195	14,928,731	73.7	5,324,592	4,299,612	4,182,984	2,891,174
	3 mos.	5,639	47,689,767	5,249,403	56,670,869	6,986,200	12,249,297	1,476,648	20,572,549	1,991,609	43,802,676	77.3	12,868,193	9,788,653	9,221,571	6,242,366
Baltimore & Ohio Chic. Term	Mar.	82	.....	.....	346,978	83,214	51,713	2,324	189,985	21,844	354,228	102.1	—7,250	—63,028	62,870	131,651
	3 mos.	82	.....	.....	983,025	138,543	132,022	6,593	550,945	52,993	898,806	91.4	84,219	—85,603	213,272	288,333
Staten Island Rapid Transit	Mar.	23	116,467	118,761	247,109	32,298	16,814	2,109	107,670	15,700	174,591	70.7	72,518	54,518	17,126	—1,155
	3 mos.	23	319,421	336,046	688,530	81,760	59,551	6,063	321,600	46,608	511,582	74.3	176,948	121,940	12,272	8,564
Bangor & Aroostook	Mar.	619	739,339	74,375	840,480	106,059	104,061	6,798	195,292	28,523	442,877	52.7	397,603	328,866	323,352	320,385
	3 mos.	619	2,122,929	199,085	2,399,762	306,628	325,861	16,733	579,152	84,084	1,320,471	55.0	1,079,291	882,438	872,001	778,064
Belt Ry. Co. of Chicago	Mar.	48	.....	.....	703,042	65,088	90,885	3,742	329,859	14,501	504,075	71.7	198,967	148,450	154,686	136,554
	3 mos.	48	.....	.....	2,017,218	177,316	239,629	11,305	1,004,575	42,839	1,475,664	73.2	541,554	390,722	462,105	426,017
Bessemer & Lake Erie	Mar.	227	830,410	8,043	858,514	72,238	323,538	14,081	268,151	36,069	702,923	81.9	155,591	131,296	183,137	1,254
	3 mos.	227	2,149,032	23,741	2,226,677	177,208	953,521	41,902	776,996	106,994	2,025,631	91.0	201,046	128,060	280,823	—82,574
Bingham & Garfield	Mar.	33	47,325	.....	49,658	6,460	7,060	1,585	10,455	4,779	30,508	61.4	19,150	10,545	26,862	16,604
	3 mos.	33	132,553	.....	138,842	19,840	12,658	4,832	31,258	13,311	82,404	59.4	56,438	30,502	82,128	50,707
Boston & Maine	Mar.	2,080	4,099,406	1,295,343	6,256,759	940,185	1,036,817	85,343	2,326,195	246,120	4,649,631	74.3	1,607,128	1,291,078	1,106,460	1,184,641
	3 mos.	2,080	11,843,623	3,984,954	18,158,722	2,783,002	2,998,098	263,727	6,825,753	661,871	13,575,902	74.8	4,582,820	3,661,881	3,016,652	3,019,980
Brooklyn East. Dist. Terminal	Mar.	11	122,799	.....	125,492	11,877	12,660	825	43,641	6,992	75,995	60.6	49,497	41,075	41,075	47,530
	3 mos.	11	345,234	.....	352,882	21,017	32,515	2,281	124,673	20,071	200,557	56.8	152,325	127,060	127,060	129,485
Buffalo & Susquehanna	Mar.	253	144,647	1,302	155,971	26,661	47,337	1,783	47,803	7,568	131,152	84.1	24,819	41,812	58,277	17,714
	3 mos.	253	451,509	3,650	485,350	81,727	144,329	5,434	147,331	23,569	402,390	82.9	82,960	95,753	147,275	53,903
Buffalo, Rochester & Pittsburgh	Mar.	601	1,316,186	69,766	1,432,074	127,614	435,997	33,030	530,269	46,604	1,175,309	82.1	256,765	226,726	243,544	264,570
	3 mos.	601	3,860,962	221,159	4,208,277	375,801	1,202,821	99,091	1,585,156	137,230	3,404,659	80.9	803,618	673,444	731,024	747,135
Canadian Pacific Lines in Maine	Mar.	233	344,034	49,815	407,712	33,610	80,041	6,895	160,192	4,267	285,005	69.9	122,707	108,207	82,224	66,031
	3 mos.	233	1,008,962	109,608	1,155,955	84,574	228,361	18,926	503,796	12,634	848,291	73.3	307,664	264,164	171,959	171,578
Canadian Pacific Lines in Vermont	Mar.	85	126,930	33,331	181,956	19,663	39,575	1,775	99,321	2,840	163,174	89.7	18,782	14,762	—16,862	—47,682
	3 mos.	85	338,055	100,789	498,166	58,048	104,018	5,217	290,604	6,978	464,865	93.3	33,301	21,241	—71,796	—128,168
Central of Georgia	Mar.	1,944	1,719,746	370,177	2,355,029	261,830	370,386	69,225	845,050	87,330	1,652,662	70.2	702,367	547,951	508,265	552,011
	3 mos.	1,944	4,528,350	1,020,714	6,174,077	770,311	1,061,090	211,498	2,327,073	265,799	4,683,109	75.9	1,490,968	1,103,648	1,104,032	1,133,898
Central New Jersey	Mar.	690	3,523,620	656,477	4,526,140	430,586	1,103,821	60,108	1,802,840	133,303	3,562,257	78.7	963,883	603,796	469,284	673,708
	3 mos.	690	10,641,063	1,968,366	13,496,314	1,225,818	3,160,966	180,537	5,343,777	397,531	10,405,757	77.1	3,090,557	2,347,299	1,870,713	1,715,479
Central Vermont	Mar.	412	559,656	100,599	713,594	83,718	95,356	17,005	303,251	23,827	525,366	73.6	188,228	172,057	174,431	—131,788
	3 mos.	412	1,468,558	291,768	1,950,051	242,825	285,243	49,296	858,450	70,136	1,512,487	77.6	437,564	388,986	407,837	—999,187
Chesapeake & Ohio	Mar.	2,730	9,334,613	569,292	10,311,909	1,519,704	2,457,474	123,346	2,729,773	284,191	7,135,855	69.2	3,176,054	2,481,445	2,639,827	2,517,673
	3 mos.	2,730	28,663,031	1,569,540	31,332,792	4,615,553	7,115,807	396,177	8,199,901	840,885	21,240,727	67.8	10,092,065	8,008,507	8,596,323	6,727,569
Chicago & Alton	Mar.	1,028	1,741,354	454,895	2,451,516	213,990	532,396	73,575	909,482	61,891	1,813,220	74.0	638,296	532,370	352,001	328,392
	3 mos.	1,028	4,897,103	1,410,353	7,011,584	598,178	1,555,934	231,075	2,711,407	184,781	5,350,312	76.3	1,661,272	1,344,407	877,812	495,177
Chicago & Eastern Illinois	Mar.	946	1,591,918	278,439	2,065,061	241,557	428,941	81,918	788,882	69,886	1,628,906	78.9	436,155	315,206	165,433	221,608
	3 mos.	946	4,813,188	873,633	6,218,267	701,739	1,272,846	245,044	2,446,949	213,661	4,922,976	79.2	1,295,291	932,363	494,125	343,737
Chicago & Illinois Midland	Mar.	131	225,648	6,843	242,833	31,131	56,559	18,376	63,879	18,312	188,257	77.5	54,576	46,641	45,111	99,967
	3 mos.	131	708,861	21,581	753,979	92,420	164,957	54,134	203,589	55,103	570,166	75.6	183,813	160,008	148,507	229,150
Chicago & North Western	Mar.	8,466	8,437,026	1,887,774	11,622,611	1,620,817	2,368,725	201,247	4,740,467	381,712	9,373,599	80.6	2,249,012	1,472,441	1,220,696	1,432,362
	3 mos.	8,466	23,883,296	5,868,699	33,421,516	4,047,854	7,012,356	593,084	14,352,624	1,128,812	27,343,739	81.8	6,077,777	3,748,257	3,030,383	3,595,322

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Chicago, Burlington & Quincy	Mar.	9,374	$10,252,469	$1,397,104	$12,954,737	$1,140,671	$1,910,451	$267,874	$4,281,635	$376,254	$8,056,519	62.2	$4,898,218	$3,752,318	$3,752,165	$3,373,848
	3 mos.	9,374	30,763,754	4,312,447	38,660,122	3,032,071	5,819,993	758,517	13,177,746	1,113,799	24,130,809	62.4	14,529,313	10,934,501	10,399,753	9,273,135
Chicago Great Western	Mar.	1,495	1,673,030	262,041	2,112,441	188,007	386,276	85,512	910,786	58,699	1,642,153	77.7	470,288	392,037	191,724	267,477
	3 mos.	1,495	4,667,539	729,409	5,881,030	552,338	1,085,980	245,803	2,750,815	171,371	4,843,589	82.4	1,037,441	787,194	273,516	401,635
Chicago, Indianapolis & Louisville	Mar.	650	1,242,273	153,627	1,556,906	139,036	311,162	39,687	575,724	38,461	1,116,632	71.7	440,274	350,572	197,406	268,890
	3 mos.	650	3,441,764	457,427	4,346,002	393,378	926,391	115,173	1,699,247	112,434	3,285,661	75.6	1,060,341	823,889	433,050	529,134
Chic., Mil., St. Paul & Pacific	Mar.	11,251	10,960,007	1,382,160	13,722,122	1,678,763	2,637,324	314,816	5,127,214	388,549	10,210,630	74.4	3,511,492	2,720,834	2,193,300	3,367,286
	3 mos.	11,251	30,725,869	4,129,303	38,707,485	4,268,656	7,617,330	896,899	15,521,814	1,117,155	29,627,640	76.5	9,079,845	6,655,097	5,046,370	7,138,668
Chicago River & Indiana	Mar.	20	.....	.....	598,152	45,425	55,786	632	211,107	15,262	328,212	54.9	269,940	229,265	313,831	312,549
	3 mos.	20	.....	.....	1,735,160	131,449	162,963	2,103	643,415	44,452	984,382	56.7	750,778	623,719	878,901	835,765
Chicago, Rock Island & Pacific	Mar.	7,564	8,768,775	1,567,567	11,400,173	1,447,565	2,365,834	253,450	4,206,142	354,311	8,748,139	76.7	2,652,034	1,976,250	1,537,481	2,035,299
	3 mos.	7,564	25,367,158	4,758,462	33,101,889	4,135,738	6,576,297	743,540	12,766,784	1,064,168	25,654,465	77.5	7,447,424	5,319,998	4,026,969	4,641,756
Chicago, Rock Island & Gulf	Mar.	516	502,235	64,316	616,730	63,847	59,726	20,514	203,762	18,326	370,848	60.1	245,882	227,438	211,555	131,685
	3 mos.	516	1,456,085	205,202	1,795,282	175,139	175,721	60,286	585,172	59,252	1,063,289	59.2	731,993	659,698	571,175	427,524
Chic., St. Paul, Minn. & Omaha	Mar.	1,746	1,563,672	359,029	2,095,561	257,428	396,957	39,960	943,183	81,014	1,730,627	82.6	364,934	256,400	199,186	324,330
	3 mos.	1,746	4,617,178	1,023,588	6,136,557	753,494	1,152,404	115,797	3,007,910	242,348	5,303,597	86.4	832,960	501,974	321,605	584,880
Clinchfield	Mar.	309	571,254	15,291	598,064	63,439	156,065	22,093	121,163	17,114	380,277	63.6	217,787	142,777	259,370	269,287
	3 mos.	309	1,721,558	43,208	1,800,670	173,543	428,891	65,820	372,559	51,786	1,093,243	60.7	707,427	482,346	824,448	713,502
Colorado & Southern	Mar.	1,035	755,437	71,233	906,248	106,779	187,795	14,218	340,634	42,091	695,172	76.7	211,076	142,580	113,925	67,541
	3 mos.	1,035	2,352,803	247,455	2,846,918	297,753	579,490	46,082	1,032,952	128,844	2,099,989	73.8	746,929	529,465	470,077	324,476
Ft. Worth & Denver City	Mar.	695	696,418	127,704	890,688	115,613	159,189	20,224	287,184	38,401	623,191	70.0	267,497	220,354	207,896	173,379
	3 mos.	695	2,218,231	404,910	2,805,299	322,862	444,526	59,807	867,055	116,912	1,820,428	64.9	984,871	810,388	791,263	712,647
Wichita Valley	Mar.	271	105,466	8,301	119,859	24,932	6,097	7	39,220	1,569	71,813	59.9	48,046	41,193	19,933	73,390
	3 mos.	271	343,319	27,570	387,823	59,048	27,957	81	120,767	5,185	212,832	54.9	174,991	150,879	88,598	156,900
Columbus & Greenville	Mar.	167	121,428	17,410	146,385	41,469	18,137	3,574	52,850	11,280	127,310	87.0	19,075	16,275	5,248	12,639
	3 mos.	167	377,312	51,842	454,678	109,963	56,991	11,670	166,711	36,568	381,899	84.0	72,779	62,472	27,666	24,607
Conemaugh & Black Lick	Mar.	23	72,334	.....	158,149	12,922	41,794	Cr. 1,140	97,312	3,600	154,488	97.7	3,661	2,661	2,181	—5,346
	3 mos.	23	202,309	.....	447,459	39,043	83,815	575	278,859	9,751	412,043	92.1	35,416	32,416	26,366	—26,986
Delaware & Hudson	Mar.	881	2,702,321	236,604	3,154,000	400,653	842,527	56,037	1,265,491	159,529	2,732,238	86.6	421,762	332,762	335,854	197,502
	3 mos.	881	8,138,249	764,161	9,547,789	1,232,137	2,410,049	162,484	3,764,873	487,646	8,074,864	84.6	1,472,925	1,205,468	1,213,164	521,738
Delaware, Lackawanna & Western	Mar.	998	4,398,085	878,544	6,142,455	579,673	1,232,186	131,579	2,669,407	187,667	4,844,870	78.9	1,297,585	810,856	826,188	916,689
	3 mos.	998	14,311,858	2,691,127	19,304,318	1,730,474	3,589,271	397,388	8,007,809	545,273	14,393,539	74.6	4,910,779	3,317,501	3,335,100	2,574,643
Denver & Rio Grande Western	Mar.	2,547	2,137,238	225,642	2,548,712	352,092	532,305	57,554	768,934	90,256	1,828,809	71.8	719,903	534,851	615,862	432,324
	3 mos.	2,547	6,544,186	671,942	7,741,023	1,103,343	1,548,459	167,966	2,379,665	265,006	5,544,685	71.6	2,196,338	1,661,178	1,873,101	1,418,812
Denver & Salt Lake	Mar.	232	179,298	21,113	217,195	34,055	71,798	2,594	43,256	12,095	163,798	75.4	53,397	43,378	50,906	33,718
	3 mos.	232	921,424	56,156	1,027,768	95,906	225,516	6,597	162,615	35,038	525,672	51.1	502,096	472,077	488,980	286,346
Detroit & Mackinac	Mar.	300	106,659	11,411	126,907	18,451	27,622	2,039	41,148	6,528	95,759	75.5	31,148	20,713	23,572	16,396
	3 mos.	300	256,222	34,805	314,142	48,893	92,757	5,991	123,460	17,553	288,668	91.9	25,474	—5,927	2,613	22,731
Detroit & Toledo Shore Line	Mar.	50	546,556	.....	559,130	29,079	47,065	7,777	111,514	7,748	203,183	36.3	355,947	313,749	178,009	176,652
	3 mos.	50	1,506,848	.....	1,530,790	82,452	117,320	22,990	349,225	25,704	597,689	39.0	933,101	814,712	475,552	427,508
Detroit Terminal	Mar.	19	.....	.....	274,898	23,622	21,810	.....	116,741	4,610	166,793	60.7	108,105	82,703	84,100	52,525
	3 mos.	19	.....	.....	740,980	55,985	62,510	.....	324,446	13,759	456,700	61.6	284,280	217,648	221,655	105,205
Detroit, Toledo & Ironton	Mar.	495	1,323,015	3,216	1,348,341	117,643	167,628	12,332	304,138	28,517	630,257	46.7	718,084	628,488	536,026	143,791
	3 mos.	495	3,796,891	9,630	3,875,131	331,711	491,726	37,411	901,987	87,419	1,849,255	47.7	2,025,876	1,765,860	1,474,201	256,181
Duluth & Iron Range	Mar.	269	76,750	6,619	96,601	55,696	115,669	1,774	85,128	22,948	281,215	291.1	—184,614	—204,316	—204,799	—201,301
	3 mos.	269	245,111	18,493	305,076	169,727	339,500	4,935	260,476	65,909	840,547	275.5	—535,471	—595,341	—595,478	—575,829
Duluth, Missabe & Northern	Mar.	307	83,333	4,349	101,608	88,302	188,334	3,796	125,964	21,994	428,390	421.6	—326,782	—425,705	—426,945	—391,438
	3 mos.	307	221,909	12,640	274,260	241,628	537,450	9,562	378,627	67,929	1,235,074	450.3	—960,814	—1,256,813	—1,261,951	—1,137,783
Duluth, Winnipeg & Pacific	Mar.	178	185,149	13,183	203,889	26,384	19,378	4,488	71,212	8,083	132,058	64.8	71,831	61,637	57,618	34,837
	3 mos.	178	565,205	41,194	628,044	65,658	108,016	13,801	230,302	24,447	449,692	71.6	178,352	147,073	151,723	139,339
Elgin, Joliet & Eastern	Mar.	453	2,167,152	9	2,385,966	172,591	365,862	14,634	813,232	52,041	1,418,245	59.4	967,721	836,287	632,644	649,296
	3 mos.	452	5,849,013	16	6,435,448	509,498	1,129,930	44,470	2,376,684	156,479	4,216,852	65.5	2,218,596	1,848,860	1,223,682	1,298,604
Erie Railroad	Mar.	2,047	7,784,038	786,069	9,396,012	899,306	2,237,177	176,415	3,656,399	305,140	7,341,021	78.1	2,054,991	1,572,898	1,520,157	1,420,944
	3 mos.	2,047	22,395,703	2,347,297	26,984,192	2,580,854	6,272,194	518,031	10,715,036	896,616	21,152,120	78.4	5,832,072	4,538,658	4,289,957	2,781,769
Chicago & Erie	Mar.	269	1,264,979	38,147	1,422,864	109,042	149,194	29,685	366,747	42,134	697,009	49.0	725,855	669,750	376,351	194,519
	3 mos.	269	3,449,469	119,597	3,853,590	346,561	415,722	86,030	1,125,847	124,929	2,098,703	54.5	1,754,887	1,586,548	697,826	197,078
New Jersey & New York	Mar.	45	24,672	93,339	123,555	14,710	24,952	1,957	74,145	3,542	119,306	96.6	4,249	141	—31,552	—29,175
	3 mos.	45	70,873	277,480	363,589	42,560	65,149	5,224	212,847	10,705	336,462	92.5	27,127	14,803	—81,116	—93,341
N. Y., Susquehanna & Western	Mar.	131	335,233	41,405	411,037	43,538	55,491	5,263	187,501	11,541	305,384	74.3	105,653	74,101	54,040	—090
	3 mos.	131	1,016,739	123,855	1,245,318	129,759	159,469	15,408	593,322	34,541	935,736	75.1	309,582	215,921	146,175	—30,105

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929—CONTINUED

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Evansville, Indianap. & Terre Haute	Mar.	146	$190,181	$4,500	$201,338	$21,670	$22,841	$1,775	$62,641	$4,769	$113,696	56.5	$87,642	$86,767	$49,889	$14,031
	3 mos.	146	554,941	11,572	585,378	62,077	66,739	5,594	193,597	16,269	344,103	58.8	241,275	223,762	111,124	41,171
Florida East Coast	Mar.	853	932,813	849,402	2,033,768	174,316	189,731	34,696	451,027	48,690	936,786	46.1	1,096,982	956,126	874,181	381,309
	3 mos.	853	2,460,953	2,133,688	5,240,388	528,917	544,490	104,602	1,224,292	150,090	2,666,945	50.9	2,573,443	2,143,733	1,925,474	1,025,436
Fort Smith & Western	Mar.	249	103,639	9,110	119,677	23,251	26,676	6,006	44,802	6,609	106,936	89.4	12,741	8,021	—3,256	—2,848
	3 mos.	249	339,746	29,256	391,653	72,541	80,700	18,349	134,298	21,030	324,987	83.0	66,666	52,464	26,505	142
Galveston Wharf	Mar.	13	.....	.....	178,533	47,349	5,748	2,996	32,852	5,829	108,697	60.9	69,836	52,836	52,834	34,217
	3 mos.	13	.....	.....	573,476	126,312	16,520	12,248	97,301	20,149	325,131	56.7	248,345	197,345	197,263	80,298
Georgia R. R.	Mar.	328	364,467	57,221	459,942	48,956	84,564	23,028	191,120	25,245	373,218	81.1	86,724	77,118	86,015	96,394
	3 mos.	328	1,007,129	157,726	1,266,692	132,547	251,892	67,487	554,010	72,315	1,079,010	85.2	187,682	161,254	199,918	186,025
Georgia & Florida	Mar.	444	144,876	10,772	165,079	33,757	20,407	9,580	62,014	8,995	133,637	81.0	31,442	21,735	21,577	44,721
	3 mos.	444	333,787	29,656	390,294	78,354	66,176	28,447	164,993	25,916	355,456	91.1	34,838	5,694	14,837	63,793
Grand Trunk Western	Mar.	345	1,764,529	144,121	1,987,557	175,367	390,097	40,360	685,630	65,539	1,367,156	68.9	620,401	528,878	404,499	335,849
	3 mos.	345	4,864,557	479,802	5,599,161	403,857	1,126,075	124,859	1,912,537	197,739	3,802,887	67.9	1,796,274	1,521,701	1,288,891	816,534
Atlantic & St. Lawrence	Mar.	166	156,119	27,509	202,907	27,650	50,263	5,343	91,250	8,135	184,482	90.9	18,425	—2,038	—54,820	—118,849
	3 mos.	166	428,479	79,475	560,461	88,657	128,732	16,651	301,547	24,240	565,252	100.8	—4,791	—54,814	—219,425	—264,135
Chic., Det. & Canada Gr. Tr. Jct.	Mar.	59	342,637	439	395,752	17,278	16,426	4,748	111,839	3,914	154,205	39.0	241,547	230,585	188,257	158,205
	3 mos.	59	899,056	2,071	1,042,019	47,966	49,479	14,235	305,223	12,163	429,026	41.2	612,993	580,231	471,215	361,934
Detroit, Grand Haven & Mil.	Mar.	192	851,731	24,752	930,918	53,679	64,060	13,482	316,192	17,628	464,354	49.9	466,564	454,668	310,251	230,135
	3 mos.	192	1,994,669	77,867	2,226,083	153,890	196,991	40,961	875,792	54,868	1,321,353	59.4	904,730	869,134	514,849	407,663
Great Northern	Mar.	8,404	7,098,356	880,504	10,077,074	1,078,370	1,782,995	253,643	3,073,215	231,444	6,510,767	64.6	3,566,307	2,869,985	2,837,327	1,507,229
	3 mos.	8,403	18,592,981	2,646,610	24,904,971	3,172,883	5,057,071	762,393	9,258,273	630,480	19,121,420	76.8	5,783,551	3,734,273	3,554,168	2,982,682
Green Bay & Western	Mar.	234	140,670	7,547	152,058	19,592	24,593	5,489	63,089	2,756	115,253	75.7	36,805	28,805	22,235	33,524
	3 mos.	234	401,675	21,083	435,777	62,282	71,967	15,698	199,640	8,772	357,542	82.0	78,235	54,187	38,583	72,761
Gulf & Ship Island	Mar.	307	243,929	49,386	329,616	61,750	54,062	5,234	125,112	8,454	258,999	78.6	70,617	38,924	19,048	85,018
	3 mos.	307	628,278	125,497	838,647	161,541	143,515	15,838	323,001	23,321	678,089	80.9	160,558	64,689	19,960	125,068
Gulf, Mobile & Northern	Mar.	733	594,916	28,651	650,181	104,565	96,944	30,935	191,766	30,021	454,819	69.95	195,362	150,875	119,630	117,375
	3 mos.	733	1,619,146	76,366	1,775,584	280,333	279,594	95,535	549,771	85,929	1,292,298	72.78	483,286	362,311	270,822	261,046
Hocking Valley	Mar.	348	1,392,909	56,029	1,531,072	220,695	315,238	15,594	443,336	44,309	1,039,168	67.9	491,904	361,541	340,490	187,445
	3 mos.	348	4,256,783	178,014	4,666,133	622,637	901,008	48,277	1,332,195	132,371	3,036,482	65.1	1,629,651	1,238,528	1,244,964	534,642
Illinois Central	Mar.	5,034	10,373,715	1,851,466	13,150,945	1,386,072	2,954,476	247,045	4,736,962	365,980	9,799,949	74.5	3,350,996	2,446,749	2,369,749	2,811,747
	3 mos.	5,035	30,512,050	5,842,282	38,965,017	4,091,503	8,546,287	801,871	14,223,891	1,084,744	29,056,959	74.6	9,908,058	7,167,434	6,957,060	6,782,576
Yazoo & Mississippi Valley	Mar.	1,705	1,667,731	247,025	2,061,319	358,980	399,815	44,378	882,285	65,586	1,752,620	85.0	308,699	138,171	67,337	63,003
	3 mos.	1,705	5,030,108	756,401	6,196,610	1,056,069	1,171,452	131,738	2,570,201	193,442	5,135,617	82.9	1,060,993	550,084	332,577	400,973
Illinois Central System	Mar.	6,740	12,055,273	2,102,009	15,229,610	1,745,052	3,359,546	291,423	5,628,915	431,712	11,567,638	76.0	3,661,972	2,586,281	2,438,447	2,867,611
	3 mos.	6,740	35,579,166	6,609,166	45,209,122	5,147,572	9,730,128	933,609	16,822,065	1,278,626	34,233,378	75.7	10,975,744	7,721,463	7,293,582	7,164,034
Illinois Terminal	Mar.	473	431,632	143,077	601,931	75,555	79,442	21,383	199,704	33,603	409,687	68.06	192,244	170,981	138,939	122,351
	3 mos.	473	1,284,175	428,562	1,783,562	202,206	270,056	62,211	625,731	121,037	1,281,044	71.83	502,518	438,608	317,719	339,305
Kansas City, Mexico & Orient	Mar.	272	143,138	4,606	155,014	63,653	26,361	6,432	50,461	8,329	153,230	98.9	1,784	—2,799	20,743	29,721
	3 mos.	272	418,070	13,797	457,297	162,041	107,822	18,543	167,233	42,858	490,337	107.2	—33,040	—56,856	8,614	126,296
Kan. City, Mex. & Orient of Tex.	Mar.	465	230,426	13,417	257,572	45,333	41,919	7,533	77,795	9,332	177,676	69.0	79,896	73,567	35,899	3,200
	3 mos.	465	754,508	36,557	838,162	257,041	156,880	23,751	239,568	11,489	679,172	81.0	158,990	129,683	1,767	63,199
Kansas City Southern	Mar.	784	1,276,206	86,348	1,513,425	194,345	259,472	58,602	455,459	87,485	1,055,138	69.7	458,287	340,757	260,368	317,878
	3 mos.	784	3,789,426	243,507	4,471,783	558,745	740,625	178,762	1,400,280	254,299	3,132,735	70.1	1,339,048	986,109	794,845	857,753
Texarkana & Ft. Smith	Mar.	81	247,666	6,990	272,222	21,741	16,553	6,870	61,342	11,201	118,554	43.6	153,668	128,362	90,670	71,315
	3 mos.	81	699,343	19,971	772,926	65,099	64,115	20,601	182,856	32,469	370,086	47.9	402,840	343,855	238,292	173,819
Kansas, Oklahoma & Gulf	Mar.	326	290,075	2,726	297,752	32,070	35,156	15,100	69,488	10,652	159,785	53.7	137,967	117,908	94,314	44,337
	3 mos.	326	867,657	8,198	891,780	117,375	90,808	42,643	206,610	30,899	483,496	54.2	408,284	347,746	280,768	182,397
Lake Superior & Ishpeming	Mar.	160	71,639	1,860	77,164	22,841	24,887	439	34,572	6,411	89,150	115.5	—11,986	—24,956	—30,894	—38,632
	3 mos.	160	208,563	5,519	225,330	71,091	81,749	1,507	106,317	19,713	280,377	124.4	—55,047	—93,956	—110,657	—114,855
Lake Terminal	Mar.	13	.....	.....	71,305	11,950	14,906	.....	43,912	1,812	72,580	101.8	—1,275	—6,302	—5,087	—16,025
	3 mos.	13	.....	.....	212,972	31,611	48,390	.....	135,635	6,267	221,903	104.2	—8,931	—24,008	—18,356	—38,710
Lehigh & Hudson River	Mar.	96	203,179	1,120	213,773	41,414	31,906	2,635	77,248	10,375	163,578	76.5	50,195	37,645	21,766	40,306
	3 mos.	96	595,354	3,368	626,192	99,761	93,134	7,894	232,544	29,286	462,619	73.9	163,573	124,642	76,129	83,601
Lehigh & New England	Mar.	216	314,172	1,093	320,415	39,598	93,635	5,033	140,431	16,949	295,591	92.3	24,824	19,890	15,904	36,821
	3 mos.	216	1,031,839	3,183	1,050,008	115,099	283,714	22,934	417,839	52,555	892,086	85.0	157,922	131,239	138,417	118,065
Lehigh Valley	Mar.	1,361	4,648,127	521,613	5,630,021	440,663	1,302,806	135,842	2,398,095	141,616	4,447,980	79.0	1,182,041	900,823	783,916	621,339
	3 mos.	1,361	13,751,370	1,518,799	16,594,659	1,156,335	3,817,904	407,654	7,111,561	447,998	13,030,182	78.5	3,564,477	2,693,911	2,248,606	700,274
Louisiana & Arkansas	Mar.	301	331,242	10,549	369,285	48,740	50,922	11,895	81,276	12,515	205,967	55.8	163,318	130,211	115,642	70,752
	3 mos.	301	932,386	29,634	983,406	146,557	154,676	35,806	243,971	37,427	620,147	63.1	363,259	263,336	222,989	175,803

Revenues and Expenses of Railways

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Louisiana Ry. & Navigation Co.	Mar.	338	$287,898	$8,640	$310,663	$51,722	$33,299	$12,039	$121,021	$11,528	$229,103	73.7	$81,560	$60,425	$31,498	$2,555
	3 mos.	338	812,570	25,341	879,320	157,365	102,377	37,877	356,785	35,803	687,721	78.2	191,599	128,176	44,192	—22,931
Louisiana Ry. & Nav. Co. of Texas	Mar.	206	73,732	2,463	80,373	36,697	15,570	3,054	42,896	6,181	104,398	129.9	—24,025	—28,626	—42,094	—18,742
	3 mos.	206	213,370	7,879	240,558	78,436	39,862	9,376	118,577	16,952	263,203	109.4	—22,645	—37,269	—74,611	—39,912
Louisville & Nashville	Mar.	5,068	8,674,146	1,308,703	10,738,564	1,966,366	2,595,196	186,484	3,877,452	366,605	9,042,032	84.2	1,696,532	1,156,756	1,093,223	2,148,692
	3 mos.	5,068	26,070,230	4,095,580	32,331,587	5,154,911	7,378,558	734,792	11,599,046	1,076,329	26,106,510	80.7	6,225,077	4,459,036	4,503,090	5,197,319
Louisville, Henderson & St. Louis	Mar.	199	206,997	38,649	264,376	47,464	53,018	7,393	106,809	12,557	228,784	86.5	35,592	21,046	15,752	39,693
	3 mos.	199	628,659	109,625	790,454	123,142	148,849	22,015	321,906	40,960	661,592	83.7	128,862	82,349	62,304	106,330
Maine Central	Mar.	1,122	1,188,616	257,372	1,592,750	208,290	317,773	19,825	630,657	55,402	1,231,824	77.3	360,926	274,567	237,474	310,513
	3 mos.	1,122	3,496,913	724,935	4,630,245	611,047	886,486	50,208	1,888,366	157,356	3,592,711	77.6	1,037,534	787,919	649,701	789,591
Midland Valley	Mar.	364	233,398	12,208	253,463	43,634	24,928	6,305	71,189	11,875	156,614	61.8	96,849	81,021	59,899	75,728
	3 mos.	364	787,653	37,890	852,492	127,823	79,925	18,492	231,024	34,848	490,718	57.6	361,774	312,363	245,674	220,526
Minneapolis & St. Louis	Mar.	1,627	1,036,552	87,759	1,190,408	133,746	223,386	34,469	559,452	44,489	995,066	83.6	195,342	135,230	70,378	133,891
	3 mos.	1,627	3,014,716	236,423	3,438,630	348,968	632,625	107,887	1,713,854	152,379	2,952,863	85.9	485,767	299,592	130,388	119,961
Minn., St. Paul & S. S. Marie	Mar.	4,380	2,892,509	351,816	3,499,555	468,378	740,722	79,336	1,432,214	119,507	2,855,201	81.6	644,354	405,576	283,137	373,003
	3 mos.	4,380	8,010,153	1,092,132	9,828,059	1,323,038	2,163,513	223,386	4,356,616	355,869	8,446,540	85.9	1,381,519	696,826	369,818	686,101
Duluth, South Shore & Atlantic	Mar.	573	365,852	54,652	445,045	54,864	74,770	7,301	187,278	10,549	336,694	75.7	108,351	76,350	56,553	35,621
	3 mos.	573	968,649	176,379	1,214,479	161,547	205,047	21,645	560,368	33,739	988,808	81.4	225,671	129,669	75,822	99,470
Spokane International	Mar.	165	77,756	11,011	95,605	16,621	9,006	3,731	32,273	6,569	69,193	72.4	26,412	20,948	14,210	13,159
	3 mos.	165	215,621	28,019	310,240	54,741	27,362	10,463	120,130	18,575	234,431	75.6	75,809	59,417	38,791	30,972
Mississippi Central	Mar.	161	132,946	6,377	144,137	20,157	24,405	9,227	38,323	8,147	100,256	69.6	43,881	33,297	32,458	28,252
	3 mos.	161	371,979	18,793	404,883	54,090	73,243	28,287	110,307	24,896	290,820	71.8	114,063	84,962	85,485	89,247
Missouri & North Arkansas	Mar.	364	140,059	10,804	159,659	36,820	22,994	9,626	70,809	8,485	149,004	93.3	10,655	8,142	—6,016	4,252
	3 mos.	364	383,214	30,675	440,140	92,511	68,580	29,207	194,484	24,437	410,376	93.2	29,764	22,269	—15,507	—37,618
Missouri-Kansas-Texas Lines	Mar.	3,188	3,711,881	513,929	4,595,731	519,580	900,078	118,806	1,376,776	177,918	3,115,360	67.8	1,480,371	1,191,455	975,194	989,074
	3 mos.	3,188	10,641,487	1,642,252	13,334,133	1,543,282	2,705,136	360,754	4,104,193	508,931	9,283,793	69.6	4,050,340	3,225,672	2,606,931	2,548,459
Missouri Pacific	Mar.	7,461	9,437,854	1,107,234	11,442,571	1,959,641	2,142,137	285,909	3,854,463	388,044	8,639,876	75.5	2,802,695	2,308,141	1,740,719	1,673,791
	3 mos.	7,461	26,908,336	3,345,973	32,767,675	4,628,586	6,122,647	896,914	11,790,151	1,141,507	24,648,996	75.2	8,118,679	6,677,281	5,193,292	4,693,534
Gulf Coast Lines	Mar.	1,026	1,334,595	159,588	1,569,762	240,044	225,933	45,039	455,438	62,885	1,023,689	65.21	546,073	498,965	380,798	369,447
	3 mos.	1,026	3,558,209	427,674	4,183,910	675,815	703,657	132,728	1,262,116	184,140	2,940,018	70.27	1,243,892	1,103,413	816,371	764,384
International-Great Northern	Mar.	1,159	1,258,505	170,702	1,577,591	252,747	268,888	38,581	648,821	70,292	1,269,979	80.50	307,612	264,291	141,393	119,638
	3 mos.	1,159	3,586,636	545,692	4,557,959	761,046	807,352	110,896	1,878,911	210,153	3,747,884	82.23	810,075	681,307	333,344	274,159
San Antonio, Uvalde & Gulf	Mar.	318	187,945	17,566	219,560	41,973	28,745	7,131	43,622	8,215	127,559	58.1	92,001	87,834	54,201	59,372
	3 mos.	318	444,378	52,568	534,879	116,631	81,774	21,076	126,622	25,171	369,931	69.2	164,948	152,490	68,151	85,349
Texas & Pacific	Mar.	2,015	3,392,060	457,939	4,102,851	639,911	668,640	83,679	1,243,177	119,192	2,745,785	66.9	1,357,066	1,153,972	900,803	954,772
	3 mos.	2,015	9,326,533	1,367,773	11,399,952	1,725,107	1,974,802	248,261	3,737,737	363,113	8,026,971	70.4	3,372,981	2,765,231	1,939,501	2,182,875
Mobile & Ohio	Mar.	1,159	1,307,269	84,485	1,474,769	216,993	261,275	55,297	541,421	46,464	1,119,259	75.9	355,510	275,615	218,126	244,347
	3 mos.	1,159	3,652,463	248,462	4,133,486	614,586	800,824	169,474	1,565,214	142,601	3,287,672	79.5	845,814	583,172	437,098	516,630
Monongahela	Mar.	171	614,097	12,115	631,590	80,000	75,000	1,132	156,752	11,583	324,467	51.4	307,123	283,151	177,585	138,769
	3 mos.	171	1,856,590	35,836	1,907,192	240,000	225,000	3,447	493,424	34,871	995,446	52.2	911,746	835,777	529,327	384,835
Monongahela Connecting	Mar.	6	.....	.....	234,511	16,756	32,680	300	95,079	3,860	148,675	63.4	85,836	73,033	66,416	25,471
	3 mos.	6	.....	.....	621,314	57,819	100,068	900	276,109	12,165	447,061	72.0	174,253	143,489	127,573	62,203
Montour	Mar.	56	126,233	.....	126,560	14,071	52,572	1,291	35,796	7,260	110,990	87.7	15,570	14,070	25,841	51,222
	3 mos.	56	453,794	.....	454,598	46,333	135,759	3,764	119,880	22,207	324,669	71.4	129,929	125,429	157,057	142,845
Nashville, Chatt. & St. Louis	Mar.	1,259	1,578,969	287,657	2,058,283	262,031	398,842	79,752	730,222	84,823	1,564,396	76.0	493,887	403,786	409,183	434,082
	3 mos.	1,259	4,278,602	825,605	5,659,308	671,360	1,133,887	267,202	2,045,109	247,841	4,392,710	77.6	1,266,598	1,012,353	1,039,156	713,411
Nevada Northern	Mar.	165	101,891	8,079	123,219	11,311	6,417	944	17,949	5,143	41,924	24.9	81,295	66,609	65,825	21,101
	3 mos.	165	288,255	20,528	343,988	35,400	18,250	2,872	54,951	14,997	127,087	21.7	216,901	172,515	168,062	61,914
Newburgh & South Shore	Mar.	6	.....	.....	137,281	5,946	30,599	.....	68,968	5,721	111,234	81.0	26,047	8,468	13,395	31,712
	3 mos.	6	.....	.....	411,072	24,651	103,773	.....	192,537	17,921	338,882	82.4	72,190	19,453	42,210	47,707
New Orleans Great Northern	Mar.	276	259,650	16,302	283,321	46,619	39,493	13,127	79,813	11,374	190,426	67.2	92,895	74,784	47,242	59,227
	3 mos.	276	708,571	44,582	775,033	121,457	105,762	38,972	235,373	34,752	536,321	69.2	238,712	186,038	111,939	170,305
New Orleans Terminal	Mar.	20	4,269	.....	168,973	14,892	8,944	.....	66,634	1,621	92,091	54.5	76,882	65,874	56,836	20,971
	3 mos.	20	7,803	.....	450,057	48,893	24,742	.....	184,336	4,806	262,777	58.4	187,280	158,345	127,032	73,872
New York Central	Mar.	6,914	20,288,631	7,322,478	31,931,768	3,713,583	7,609,816	461,686	11,563,793	933,671	24,778,258	77.6	7,153,510	4,859,439	4,775,653	4,652,701
	3 mos.	6,914	57,992,081	22,753,344	92,699,283	10,509,829	21,928,881	1,398,047	34,040,103	2,727,758	72,096,807	77.8	20,602,476	13,885,519	13,227,931	11,972,925
Cincinnati Northern	Mar.	244	322,764	2,660	335,449	34,221	68,951	5,474	103,403	9,977	222,026	66.2	113,423	88,018	76,723	66,047
	3 mos.	244	902,190	10,926	932,722	109,399	206,831	17,274	338,134	30,106	701,745	75.2	230,977	167,970	119,759	125,526
Cleve., Cinn., Chicago & St. Louis	Mar.	2,397	5,797,269	1,123,780	7,530,046	741,761	1,611,266	144,101	2,785,017	250,410	5,617,120	74.6	1,912,926	1,428,119	1,322,096	1,307,369
	3 mos.	2,397	17,129,386	3,508,615	22,362,219	2,013,339	5,014,996	435,896	8,468,262	715,182	16,902,290	75.6	5,459,929	4,095,857	3,782,231	3,201,734

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Indiana Harbor Belt	Mar.	117	$.....	$.....	$1,118,145	$108,000	$102,692	$5,239	$463,506	$27,673	$725,409	64.9	$392,736	$324,371	$287.752	$264,586
	3 mos.	121	.....	.....	3,093,929	324,000	332,831	14,754	1,367,825	78,259	2,159,457	69.8	934,472	755,355	645,367	542,824
Michigan Central	Mar.	1,858	6,278,438	1,439,285	8,569,390	714,409	1,865,671	134,832	2,668,365	170,007	5,652,478	66.0	2,916,912	2,301,468	2,085,580	1,942,423
	3 mos.	1,858	16,919,448	4,649,638	23,870,693	1,988,565	5,233,550	393,227	7,805,633	512,432	16,244,759	68.1	7,625,934	5,935,764	5,352,658	4,930,421
Pittsburgh & Lake Erie	Mar.	231	2,503,853	189,696	2,823,257	318,547	1,068,149	26,881	912,257	78,325	2,413,619	85.5	409,638	247,938	591,262	600,471
	3 mos.	231	7,156,635	568,896	8,060,644	961,055	2,995,597	83,800	2,722,561	235,902	7,027,488	87.2	1,033,156	563,700	1,667,141	1,627,297
New York, Chicago & St. Louis	Mar.	1,690	4,654,607	131,520	4,955,708	494,503	894,806	127,070	1,675,001	140,480	3,313,408	66.9	1,642,300	1,356,500	1,120,373	692,771
	3 mos.	1,690	12,883,785	378,827	13,702,018	1,382,070	2,557,102	374,797	4,895,591	427,310	9,626,221	70.3	4,075,797	3,307,084	2,660,769	1,815,781
N. Y., New Haven & Hartford	Mar.	2,129	6,173,195	3,723,987	11,199,245	1,265,926	1,999,264	95,269	3,674,695	331,076	7,532,053	67.3	3,667,192	2,968,120	2,463,066	2,034,947
	3 mos.	2,129	17,153,503	11,090,153	31,867,628	3,624,944	5,861,115	291,710	10,647,377	1,015,997	21,954,053	68.9	9,913,575	7,712,644	6,244,136	4,638,004
New York Connecting	Mar.	20	222,243	.....	260,409	14,693	8,927	.....	40,274	1,630	65,524	25.2	194,885	156,885	124,800	107,880
	3 mos.	20	646,672	.....	737,897	240,636	11,195	.....	103,349	5,200	360,380	48.8	377,517	263,517	188,718	297,756
New York, Ontario & Western	Mar.	568	627,766	53,649	829,682	98,716	179,567	18,897	434,351	33,710	768,093	92.6	61,589	16,541	—29,589	—19,703
	3 mos.	568	1,935,167	163,504	2,508,776	294,101	538,046	56,967	1,319,453	102,447	2,324,018	92.6	184,758	49,709	—83,176	—224,890
Norfolk & Western	Mar.	2,240	7,908,540	426,171	8,665,466	1,091,301	1,789,299	111,590	2,225,896	230,602	5,475,816	63.2	3,189,650	2,386,076	2,614,683	2,525,513
	3 mos.	2,240	24,773,602	1,260,865	26,927,067	3,454,764	5,310,351	345,611	6,757,454	717,089	16,649,385	61.8	10,277,682	7,872,957	8,614,074	6,174,167
Norfolk Southern	Mar.	931	673,827	29,311	752,930	99,288	105,095	27,352	274,814	30,069	536,510	71.3	216,420	164,872	139,772	200,145
	3 mos.	931	1,737,078	88,520	1,964,675	265,448	305,673	80,506	781,900	87,929	1,512,595	77.0	452,080	299,590	244,977	421,409
Northern Pacific	Mar.	6,792	6,305,312	740,690	7,831,859	897,845	1,634,319	218,626	2,634,947	256,831	5,741,096	73.3	2,090,763	1,432,454	1,858,341	2,257,347
	3 mos.	6,792	16,278,278	2,286,821	20,584,827	2,142,266	4,571,593	669,135	8,032,530	782,183	16,460,878	80.	4,123,949	2,164,144	3,365,679	4,160,531
Northwestern Pacific	Mar.	477	283,254	122,819	454,360	86,481	94,290	7,236	233,539	19,731	441,218	97.1	13,142	—25,094	—28,567	—78,978
	3 mos.	477	746,278	338,491	1,221,443	281,150	274,017	23,529	672,290	60,367	1,310,974	107.3	—89,531	—204,283	—214,051	—243,660
Pennsylvania R. R.	Mar.	10,466	39,288,032	10,858,817	55,392,596	6,548,952	11,174,376	818,238	19,446,889	1,605,006	40,301,656	72.8	15,090,940	12,028,207	10,937,420	8,947,945
	3 mos.	10,466	110,528,266	31,600,531	156,740,033	18,739,540	32,772,289	2,525,146	56,860,891	4,801,587	117,750,542	75.1	38,989,491	21,395,722	27,685,478	21,697,884
Long Island	Mar.	404	933,648	1,947,411	3,043,395	383,059	526,982	23,345	1,307,942	64,167	2,307,337	75.8	736,058	629,161	489,748	348.849
	3 mos.	404	2,612,716	5,621,187	8,706,257	1,154,357	1,442,602	60,474	3,834,217	185,507	6,681,351	76.7	2,024,906	1,760,523	1,354,773	616,461
West Jersey & Seashore	Mar.	370	424,688	301,240	757,778	108,696	108,012	4,754	318,820	15,557	556,615	73.5	201,163	172,736	149,036	—39,297
	3 mos.	370	1,189,405	823,943	2,110,885	310,744	330,243	13,366	964,704	43,517	1,664,301	78.8	446,584	426,612	362,335	—71,418
Peoria & Pekin Union	Mar.	19	22,698	1,768	152,915	16,284	14,619	5,496	64,457	8,990	109,846	71.9	43,069	26,069	40,480	58,228
	3 mos.	19	68,584	5,564	462,700	38,544	40,443	16,831	205,113	25,106	326,037	70.5	136,663	85,663	129,582	188,361
Pere Marquette	Mar.	2,241	3,512,107	215,737	3,958,798	252,893	774,291	63,373	1,328,643	107,018	2,528,318	63.9	1,430,480	1,169,641	1,018,508	844,085
	3 mos.	2,241	9,484,383	718,589	10,858,663	697,181	2,290,484	192,095	3,838,961	330,722	7,370,211	67.9	3,488,452	2,797,584	2,481,618	1,796,906
Pittsburgh & Shawmut	Mar.	102	145,514	5,607	153,200	20,851	40,419	2,095	43,127	6,441	112,933	73.7	40,267	38,925	40,850	51,166
	3 mos.	102	442,255	13,256	461,119	55,937	101,054	5,082	133,114	23,663	318,850	69.1	142,269	138,202	144,109	165,589
Pittsburgh & West Virginia	Mar.	92	393,442	4,629	429,755	19,763	86,990	17,135	77,968	23,853	237,015	55.2	192,740	139,606	203,429	172,445
	3 mos.	92	1,177,618	13,315	1,291,682	59,155	227,141	51,000	236,025	64,424	670,674	51.9	621,008	456,649	653,370	467,668
Pittsburgh, Shawmut & Northern	Mar.	198	146,979	1,623	152,584	24,590	32,023	1,648	51,037	6,237	115,535	75.7	37,049	34,054	25,933	22,363
	3 mos.	198	446,384	5,182	463,203	72,573	89,187	5,206	150,826	17,850	335,642	72.5	127,561	118,738	97,081	77,308
Quincy, Omaha & Kansas City	Mar.	249	36,261	14,360	57,156	21,407	10,305	743	25,553	3,125	61,078	106.9	—3,922	—8,779	—11,399	—10,957
	3 mos.	249	114,831	31,144	163,793	53,485	28,026	2,150	76,412	7,731	167,636	102.3	—3,843	—18,413	—25,901	—24,231
Reading	Mar.	1,460	6,643,817	602,187	7,827,494	1,005,247	1,865,836	86,635	3,027,815	216,212	6,235,752	79.7	1,591,742	1,242,223	1,281,309	1,093,455
	3 mos.	1,460	20,143,221	1,843,273	23,540,090	2,854,407	5,545,654	263,053	9,032,668	652,114	18,438,351	78.3	5,101,739	3,977,602	4,003,560	2,971,574
Atlantic City	Mar.	163	111,081	96,181	224,670	59,894	27,239	7,513	176,434	5,943	276,966	123.3	—52,296	—92,596	—114,707	—114,907
	3 mos.	163	319,745	247,639	616,765	178,763	84,731	16,098	502,415	16,781	798,997	129.5	—182,232	—303,146	—373,811	—467,580
Richmond, Fredericksburg & Potomac	Mar.	117	558,215	471,747	1,250,395	140,770	174,218	9,025	381,449	35,770	771,879	61.7	478,516	401,907	335,749	211,068
	3 mos.	117	1,485,444	1,262,394	3,293,576	295,328	497,527	26,884	1,068,014	108,632	2,073,805	63.0	1,219,771	1,013,805	834,831	508,620
Rutland	Mar.	413	290,794	88,592	499,544	83,764	109,382	10,459	205,045	16,372	426,607	85.4	72,937	48,350	58,634	75,663
	3 mos.	413	789,618	266,165	1,399,687	244,182	299,850	30,946	593,768	50,211	1,223,709	87.4	175,978	107,399	133,477	183,747
St. Louis-San Francisco	Mar.	5,304	5,371,167	830,304	6,726,174	954,016	1,329,245	125,452	2,271,579	230,821	4,877,834	72.52	1,848,340	1,438,128	1,533,486	1,741,838
	3 mos.	5,304	15,096,643	2,596,688	19,155,880	2,385,699	3,730,739	379,112	6,783,778	691,086	13,881,334	72.47	5,274,546	4,101,568	4,382,608	4,489,095
Ft. Worth & Rio Grande	Mar.	233	74,382	8,423	92,784	23,780	17,144	3,597	44,454	5,073	93,713	101.0	—929	—5,196	—13,292	—8,727
	3 mos.	233	236,994	24,472	293,081	62,626	51,777	10,154	134,862	15,419	274,354	93.6	18,727	5,892	—19,104	—28,871
St. Louis-San Francisco & Texas	Mar.	154	127,908	10,582	144,495	25,661	25,120	5,850	55,455	8,196	120,134	83.1	24,361	21,268	—6,741	—12,490
	3 mos.	154	390,440	34,714	442,650	69,832	71,919	16,079	175,539	23,322	356,459	80.5	86,191	77,069	—6,396	—11,819
St. Louis Southwestern	Mar.	939	1,450,722	56,805	1,579,864	180,389	229,013	69,059	398,084	64,378	954,059	60.4	625,805	538,234	406,204	360,999
	3 mos.	939	4,126,901	178,301	4,510,418	487,065	692,425	218,119	1,194,934	197,191	2,821,431	62.6	1,688,987	1,485,851	1,124,080	1,120,663
St. Louis Southwestern of Texas	Mar.	807	533,236	35,898	630,940	259,424	139,097	27,190	305,961	34,402	777,124	123.2	—146,184	—176,185	—151,570	—91,051
	3 mos.	807	1,529,250	108,200	1,815,391	721,924	394,235	85,203	906,312	104,438	2,232,514	123.0	—417,123	—502,410	—427,898	—127,289
San Diego & Arizona	Mar.	156	94,035	30,179	126,601	21,947	17,274	4,193	31,852	7,964	84,699	66.9	41,902	36,014	35,951	32,475
	3 mos.	156	269,930	81,828	356,309	59,008	49,615	12,790	95,889	23,944	245,758	69.0	110,551	92,890	91,709	74,053

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Seaboard Air Line	Mar.	4,490	$4,475,223	$838,470	$5,892,056	$683,010	$913,674	$208,625	$1,999,416	$182,521	$4,088,632	69.4	$1,803,424	$1,449,137	$1,201,765	$1,215,800
	3 mos.	4,490	12,035,928	2,879,370	16,403,599	1,970,066	2,699,983	618,644	5,652,110	528,587	11,768,371	71.7	4,635,228	3,607,855	3,011,153	2,819,077
Southern Ry.	Mar.	6,730	9,093,796	1,881,627	12,082,582	2,100,186	2,095,027	244,415	4,102,128	378,247	8,959,469	74.2	3,123,113	2,359,155	2,185,126	2,766,184
	3 mos.	6,730	26,125,755	5,568,739	34,543,763	5,598,571	6,122,876	739,750	11,864,479	1,099,778	25,619,826	74.2	8,923,937	6,655,105	6,237,598	6,456,270
Alabama Great Southern	Mar.	314	653,228	139,184	893,880	141,738	157,318	21,099	244,797	23,298	594,454	66.5	299,426	239,032	266,288	227,477
	3 mos.	314	1,865,130	392,045	2,461,997	419,264	490,045	66,372	722,873	69,262	1,786,722	72.6	675,275	489,702	566,555	494,913
Cinn., New Orleans & Tex. Pacific	Mar.	338	1,367,948	268,541	1,748,460	1,299,491	446,886	42,156	566,996	54,084	2,427,105	138.8	—678,645	—677,419	—730,778	499,918
	3 mos.	338	4,135,298	880,845	5,316,117	1,981,782	1,172,093	135,026	1,542,506	162,550	5,039,824	94.8	276,293	78,846	8,233	1,136,879
Georgia Southern & Florida	Mar.	397	237,229	148,332	452,897	102,094	86,708	8,556	175,151	8,784	391,629	86.5	61,268	36,181	25,565	18,178
	3 mos.	397	634,725	419,816	1,181,824	259,603	239,253	21,020	465,693	25,760	1,038,302	87.9	143,522	72,423	61,375	58,228
New Orleans & Northeastern	Mar.	204	362,958	70,671	534,874	67,736	87,976	11,105	144,086	14,231	328,896	61.5	205,978	157,496	123,305	92,352
	3 mos.	204	1,049,901	195,705	1,402,135	176,037	240,109	36,264	401,246	43,104	907,772	64.7	494,363	349,926	240,724	209,946
Northern Alabama	Mar.	110	92,699	6,344	102,895	27,338	3,230	2,478	29,287	2,753	65,063	63.2	37,832	28,832	6,970	2,867
	3 mos.	110	290,025	18,514	319,456	65,465	9,757	6,673	94,632	8,330	184,954	57.9	134,502	112,032	49,919	—13,057
Southern Pacific	Mar.	8,887	13,356,229	3,277,042	18,451,805	2,449,509	3,112,352	399,025	5,957,940	60[illegible],449	12,857,585	69.7	5,594,220	4,166,002	3,772,105	3,869,127
	3 mos.	8,887	37,125,043	9,432,426	51,537,797	6,629,111	8,948,035	1,283,816	17,344,409	1,938,837	37,123,753	72.0	14,414,044	10,178,973	9,267,077	8,495,049
So. Pacific Steamship Lines	Mar.	....	783,378	48,602	943,061	16,864	227,914	20,407	598,479	29,848	893,512	94.7	49,549	47,704	49,455	41,596
	3 mos.	....	2,201,234	124,917	2,667,724	57,254	687,253	60,580	1,723,970	99,628	2,628,685	98.5	39,039	34,168	38,920	131,341
Texas & New Orleans	Mar.	4,729	5,089,670	911,581	6,495,455	924,516	1,259,024	167,304	2,083,996	245,955	4,680,243	72.1	1,815,212	1,438,871	1,081,136	650,994
	3 mos.	4,729	13,902,922	2,669,724	17,929,670	2,725,523	3,661,662	524,506	6,090,119	774,497	13,823,090	77.1	4,106,580	3,092,280	2,163,278	904,815
Spokane, Portland & Seattle	Mar.	554	603,555	66,463	738,937	111,320	106,720	10,440	215,934	24,675	473,189	64.0	265,748	180,299	165,833	177,218
	3 mos.	554	1,630,487	219,637	2,034,551	238,165	295,256	30,032	643,376	73,730	1,292,184	63.5	742,367	486,300	455,047	387,817
Tennessee Central	Mar.	296	222,684	16,056	255,537	56,054	48,026	7,485	97,060	12,718	221,270	86.6	34,267	28,712	10,036	52,135
	3 mos.	296	671,140	49,175	766,441	159,895	132,031	25,241	284,878	37,728	639,500	83.4	126,941	109,866	56,610	95,882
Terminal R. R. Assn. of St. Louis	Mar.	55	.....	.....	1,070,586	140,065	94,627	2,661	460,459	27,647	727,455	67.9	343,131	249,188	339,191	379,652
	3 mos.	55	.....	.....	3,181,292	380,524	264,563	8,499	1,495,746	81,916	2,239,403	70.4	941,889	657,712	916,918	1,086,383
Texas Mexican	Mar.	162	85,260	2,544	104,740	18,337	16,918	4,267	43,192	7,297	90,011	85.9	14,729	9,729	4,628	34,034
	3 mos.	162	252,807	9,422	303,754	55,034	52,463	12,055	127,700	22,357	269,609	88.8	34,145	19,067	—299	24,667
Toledo, Peoria & Western	Mar.	239	175,478	1,098	180,899	22,707	22,994	10,918	62,876	8,072	127,567	70.5	53,332	46,862	35,672	19,646
	3 mos.	239	534,117	2,932	553,821	51,127	63,071	33,086	197,035	24,532	368,851	66.6	184,970	161,621	130,804	34,272
Toledo Terminal	Mar.	28	.....	.....	144,365	825	16,122	612	55,607	5,648	78,814	54.6	65,551	50,318	79,669	59,782
	3 mos.	28	.....	.....	414,735	8,161	48,793	1,753	177,477	18,090	254,274	61.3	160,461	111,915	194,633	156,098
Trinity & Brazos Valley	Mar.	367	140,127	5,425	152,443	33,606	32,705	5,572	67,665	12,024	150,020	98.4	2,423	—5,344	—28,573	—26,633
	3 mos.	367	513,804	16,721	552,213	109,618	102,603	16,403	246,377	35,733	505,172	91.5	47,041	23,567	—59,724	—42,870
Ulster & Delaware	Mar.	128	25,973	3,155	70,116	13,080	15,636	1,192	36,500	3,906	70,314	100.3	—198	—4,298	—5,967	—8,483
	3 mos.	128	65,078	9,406	181,045	36,235	42,826	3,379	109,101	12,728	204,269	112.8	—23,224	—33,524	—37,597	—53,390
Union R. R. of Penna.	Mar.	45	.....	.....	783,958	103,842	173,938	149	346,934	13,633	638,496	81.4	145,462	115,462	191,064	122,291
	3 mos.	45	.....	.....	2,120,046	244,785	493,770	450	1,018,456	41,816	1,799,277	84.9	320,769	230,769	419,432	373,592
Union Pacific	Mar.	3,765	7,376,824	1,113,779	9,298,675	1,193,640	1,997,008	172,958	2,627,353	330,606	6,469,782	69.6	2,828,893	2,103,878	1,960,393	1,905,730
	3 mos.	3,765	21,132,664	3,188,135	26,503,940	2,506,717	5,760,665	483,877	7,749,829	1,001,502	17,929,864	67.6	8,574,076	6,399,865	6,036,326	5,575,066
Oregon Short Line	Mar.	2,539	2,558,338	309,200	3,079,673	525,034	489,176	52,329	891,261	133,813	2,134,924	69.3	944,749	664,198	589,859	438,470
	3 mos.	2,539	7,583,280	917,598	9,113,399	1,131,391	1,410,115	151,759	2,696,026	394,498	5,939,481	65.2	3,173,918	2,319,664	2,123,946	1,543,189
Oregon-Wash. R. R. & Nav.	Mar.	2,365	1,894,413	238,555	2,346,122	506,975	424,592	76,739	912,086	138,094	2,080,534	88.7	265,588	64,111	—46,370	92,277
	3 mos.	2,365	5,215,714	714,888	6,515,427	1,119,908	1,127,306	223,392	2,700,213	397,365	5,628,401	86.4	887,026	296,444	—44,275	—119,083
Los Angeles & Salt Lake	Mar.	1,208	1,831,034	315,454	2,337,303	340,324	379,787	78,162	708,453	84,118	1,676,303	71.7	661,000	519,577	419,342	56,514
	3 mos.	1,208	5,076,474	915,908	6,538,629	971,709	1,102,379	233,612	2,003,765	249,774	4,811,942	73.6	1,726,687	1,303,991	1,010,053	99,521
St. Joseph & Grand Island	Mar.	258	291,746	13,629	323,155	44,582	42,915	3,105	107,100	15,838	213,540	66.1	109,615	88,202	68,329	83,783
	3 mos.	258	861,346	36,857	946,195	103,483	125,232	9,381	322,661	47,036	607,793	64.2	338,402	272,346	216,342	241,069
Utah	Mar.	111	167,643	.....	168,045	24,483	39,332	381	35,024	5,422	104,642	62.3	63,403	51,096	45,623	26,386
	3 mos.	111	674,779	.....	675,588	89,147	131,416	1,141	141,038	16,344	379,086	56.1	296,502	248,162	222,577	109,139
Virginian	Mar.	545	1,417,845	35,876	1,531,025	169,784	289,362	14,441	323,351	31,534	826,905	54.0	704,120	544,115	619,461	455,304
	3 mos.	545	4,700,379	99,797	5,025,500	468,754	894,209	43,043	993,818	96,688	2,491,935	49.6	2,533,565	2,003,560	2,213,363	1,725,226
Wabash	Mar.	2,523	5,521,814	555,382	6,484,392	805,959	1,049,142	170,022	2,399,179	192,119	4,637,768	71.5	1,846,624	1,580,767	1,220,658	1,125,397
	3 mos.	2,523	15,517,232	1,652,449	18,344,402	1,971,145	3,123,150	498,319	7,063,026	569,711	13,226,947	72.4	5,057,455	4,183,766	3,217,463	2,400,234
Ann Arbor	Mar.	293	542,653	15,919	576,105	60,545	100,461	13,331	215,111	12,422	401,865	69.8	174,240	146,528	117,239	97,277
	3 mos.	293	1,469,107	51,087	1,565,344	147,568	283,869	40,944	623,759	35,246	1,131,318	72.3	434,026	351,306	270,987	204,383
Western Maryland	Mar.	875	1,453,583	27,329	1,530,014	218,783	322,726	40,479	417,994	41,138	1,041,252	68.1	488,762	408,762	479,795	455,072
	3 mos.	875	4,250,465	76,328	4,494,850	654,658	902,030	126,523	1,271,358	126,333	3,086,721	68.7	1,408,129	1,168,129	1,301,403	1,302,606
Western Pacific	Mar.	1,051	1,169,409	95,660	1,338,659	231,058	274,086	78,651	486,343	45,464	1,117,299	83.5	221,360	118,680	191,557	—15,502
	3 mos.	1,051	3,258,836	229,890	3,704,034	597,008	764,428	205,156	1,448,915	140,288	3,180,070	85.9	523,964	214,742	394,427	66,402
Wheeling & Lake Erie	Mar.	511	1,614,188	22,102	1,706,700	185,539	428,206	36,168	499,268	44,378	1,194,701	70.0	511,999	384,499	362,973	299,279
	3 mos.	511	4,591,916	70,477	4,915,329	474,431	1,220,955	111,052	1,450,080	140,079	3,400,086	69.2	1,515,243	1,112,720	1,045,991	751,862

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1929—CONTINUED

News of The Week

(Continued from page 1123)

C. Bleam, P. H. Griffin and J. S. Pendleton.

Edna Brass Manufacturing Company, Cincinnati, Ohio.—Mechanical lubricators, water column, fire extinguishers, air manifolds, boiler checks, gage cocks, cylinder cocks, water gages, auxiliary oilers, coal sprinkler, oil burners and water-gage fittings. Represented by Wm. Beck, E. O. Corey, H. A. Glenn and F. S. Wilcoxen.

Ford, J. B., Company, Wyandotte, Mich.—Literature. Represented by C. S. Tompkins.

Foster-Johnson Reamer Company, Elkhart, Ind.—Expansion reamers and special tools for air brake equipment. Represented by F. M. Enos, L. G. Groesl and C. B. Whitmyer.

Garlock Packing Company, Palmyra, N. Y.—Mechanical packings. Represented by J. F. Franey and H. J. Ramshaw.

George Manufacturing Company, Philadelphia, Pa.—Automatic drain valves and automatic drain and relief valves. Represented by R. H. George.

Gold Car Heating & Lighting Company, Brooklyn, N. Y.—Pressure and vapor regulators, end valves, couplers and automatic drain valves for air pumps. Represented by R. L. Belknap and A. D. Stuver.

Graham-White Sander Corporation, Roanoke, Va.—Sanders and spreaders. Represented by G. S. Turner and W. H. White.

Grind-Rite Company, Chicago.—Angle cock and cutout cock grinder. Represented by Fred H. Sasser.

Gustin-Bacon Mfg. Company, Kansas City, Mo.—Copper-asbestos gaskets, air-brake equipment gaskets, emergency piston and valve for triple valves, brake-pipe clamp, brake-cylinder piston-rod seal, piston sleeve protector and air brake hose and fittings. Represented by F. L. Bacon, W. E. Davis, Clark Diller, J. W. Foyle, F. C. Fuller, A. L. Gustin, A. L. Gustin, Jr., G. R. Miller, D. P. Morgan, Fred Speer and W. L. Trout.

Hannan, J. W., Coffeyville, Kans.—Air-cylinder stroke and pressure indicators and literature.

Hutto Engineering Company, Inc., Detroit, Mich.—Cylinder grinders. Represented by G. M. Alderman, S. E. Bodell, C. A. Dunn, A. Fitzpatrick, A. E. Hart, F. W. Hartzell, J. W. Hindes, R. D. Reese, C. H. Scholer and J. G. Young.

International Correspondence Schools, Scranton, Pa.—Air-brake models, instruction papers and catalogues. Represented by F. S. Powell and J. F. Tolbert.

Johns-Manville Corporation, New York.—Air-pump, throttle, valve-stem, reverse-gear and miscellaneous packings; truss-plate and Masticoke car flooring, engineer's insulating tape, sponge-felt pipe covering with weatherproof jacket and front-end gasketing tape. Represented by P. R. Austin, C. S. Clingman, J. D. Johnson, T. O'Leary, H. R. Poulson, B. J. Queen and J. C. Younglove.

Leslie Company, Lyndhurst, N. J.—Steam-heat reducing valves. Represented by J. J. Cizek.

MacLean-Fogg Lock Nut Company, Chicago.—Lock nuts. Represented by J. W. Fogg and J. A. MacLean.

Manning, Maxwell & Moore, Inc., Chicago.—Brake-valve reconditioning tools and literature. Represented by Frank W. Blake and R. S. Dean.

Murdock Manufacturing & Supply Company, Cincinnati.—Air valve. Represented by J. E. Endebrock.

National Tube Company, Pittsburgh, Pa.—Scale-free pipe, copper-steel and seamless pipe for locomotive and train lines and seamless mechanical tubing. Represented by P. J. Conrath, J. M. Denney, L. H. Gourdain, W. F. Jones, J. W. Kelly, H. W. Mollison, H. R. Redington and A. S. Robinson.

New York Air Brake Company, New York.—Sectional U-12-B valve, centrifugal strainer, gaskets, hose couplings, sectional release valve and model showing brake-cylinder protector in operation. Represented by G. A. Allen, Chas. Campbell, J. D. Cartin, Harry A. Flynn, Bert Haynes, George Kleifges, Chas. Lovell, Fred Quayle, L. W. Sawyer, Jas. L. Smith, Oscar Tregloff, E. F. Wentworth and H. T. Wentworth.

New York & New Jersey Lubricant Company, New York.—Oils, grease and literature. Represented by J. H. Bennis.

Nichols, Geo. P., & Bro., Chicago.—Pneumatic release valve for air brakes on freight cars, literature, etc. Represented by H. E. Notley.

Oakite Products, Inc., New York.—Working model of vapor system of laundering air pumps and cleaning intercooler coils and main air reservoir, using Okemco. Represented by Charles E. Barber and John A. Carter.

Oxweld Railroad Service Company, New York.—Oxyacetylene torches, tips, gages and literature. Represented by O. D. Hays and A. N. Lucas.

Pilot Packing Company, Chicago.—Packing. Represented by Joseph Sinkler.

Pocket List of Railroad Officials, New York.—Pocket lists. Represented by B. J. Wilson.

Railway Journal, Chicago.—Copies of magazine.

Reading Iron Company, Reading, Pa.—Pipe for air-brake use, parts of hand and roe puddle ball and bulletins on manufacture. Represented by James K. Aimer, John G. Cottle and Charles T. Ressler.

Robinson Automatic Connector Company, New York.—Automatic train-pipe connectors. Represented by C. O. Bradshaw and Joseph Robinson.

Sellers, William, & Co., Inc., Philadelphia, Pa.—Exhaust feedwater-heater injector, non-lifting injector, starting valve, steel bronze nuts, boiler checks and drifting valves. Represented by James R. New and P. E. Raymond.

Sheafe Engineering Company, Chicago.—Air hose couplings and parts. Represented by Ralph Sheafe.

Special Bolt Machinery Corporation, New York.—Semi-automatic valve machine for air-brake work. Represented by H. L. Kenah.

Swanson Company, Chicago.—Locomotive steam- and air-gage holders. Represented by R. V. Larson and O. W. Swanson.

Union Draft Gear Company, Chicago.—Model of Cardwell friction draft gear and literature. Represented by O. C. Heckart and J. E. Tarleton.

Superior Railway Equipment Company, Chicago.—Power hand brake. Represented by Bert Parks, F. L. Ingraham and H. C. Smith.

United States Graphite Company, Saginaw, Mich.—Brake-cylinder and triple-valve lubricants and pipe-joint compound. Represented by Walter R. Pflasterer.

Universal Draft Gear Attachment Company, Chicago.—Power hand brakes and slack adjusters for freight equipment. Represented by H. E. Bartsch, P. B. Camp, C. Carmichael, C. C. Kinsman and H. I. Wrigley.

Vapor Car Heating Company, Inc., Chicago.—Heating system with thermostatic control, locomotive steam-heat valve equipment, flexible metallic steam conduits, railroad yard steam joints, steam- and air-pressure regulators and fin type radiating pipes. Represented by J. J. Keane, E. C. Post, L. B. Rhodes and E. E. Smith.

Westinghouse Air Brake Company, Wilmerding, Pa.—Brake-cylinder dirt protectors, pedestal brake valves, Electrotite hose couplings, No-oxide protected reservoirs, slack adjusters, Pneuphonic air horns, angle cocks with U-bolt extension, packing rings, caboose conductor's valve, new reservoir release valve, hose coupling gages, steel air-valve cages, air-pump governor, single-car test device, M3 feed valve, flanged union fittings, packing cups and gaskets, A.R.A. pressure-retaining valve and other detail air-brake parts. Represented by F. W. Ainsworth, A. L. Berghane, H. H. Burns, L. M. Carlton, R. I. Cunningham, P. H. Donovan, F. B. Farmer, E. R. Fitch, C. D. Foltz, J. S. Y. Fralich, H. L. Fuller, A. K. Hohmyer, J. H. Holtom, John Hume, A. G. Huston, R. P. Ives, F. B. Johnson, R. J. Knapp, A. C. Layton, E. A. Maylock, J. C. McCune, T. G. Myles, H. J. Robinson, T. H. Thomas, E. H. Weaver, C. J. Werlick, L. W. Wilcox, J. B. Wright and P. E. Yancey.

Willson Products, Inc., Reading, Pa.—Railroad and industrial goggles, protective equipment for welding, literature, etc. Represented by Donald Charlton.

Woodruff Ball Joint Company, Chicago.—Metallic steam-heat connectors, syphon-jet cleaning system. Represented by L. N. Callahan and L. D. Woodruff.

Revenues and Expenses for March

Class I railroads in March had a total net railway operating income of $97,466,476, or at the annual rate of return of 5 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In March, 1928, the total was $90,876,037, or 4.73 per cent.

Operating revenues for March amounted to $516,973,409, compared with $506,098,451 in March, 1928, or an increase of 2.1 per cent. Operating expenses, $377,279,236, an increase of 0.9 per cent. Taxes in March amounted to $32,511,005, an increase of 3.2 per cent. This brought the total tax bill of the Class I railroads for the first three months in 1929 to $95,254,240, an increase of $5,902,873 or 6.6 per cent above those of the corresponding period in 1928.

Twenty three Class I railroads operated at a loss in March of which seven were in the Eastern district, three in the Southern and thirteen in the Western.

For the first three months in 1929 the net railway operating income amounted to $259,541,880, at the annual rate of 5.37 per cent. In the corresponding period of 1928, the net amounted to $217,370,419, or 4.57 per cent.

Operating revenues for the first three months in 1929 amounted to $1,479,669,257, compared with $1,421,707,254, during the corresponding period in 1928, or an increase of 4.1 per cent. Operating expenses totaled $1,096,762,124, an increase of nine-tenths of one per cent.

Net railway operating income by districts for the first three months with the percentage of return based on property investment on an annual basis was as follows:

New England Region	$11,393,260	5.82%
Great Lakes Region	46,972,649	5.73%
Central Eastern Region	57,893,988	6.05%
Pocahontas Region	20,258,591	9.18%
Total Eastern District	136,518,448	6.23%
Total Southern District	34,738,691	4.08%
Northwestern Region	15,718,433	3.87%
Central Western Region	50,663,848	5.72%
Southwestern Region	21,902,420	4.42%
Total Western District	88,284,701	4.94%
UNITED STATES	$259,541,880	5.37%

Class I railroads in the Eastern District for the three months had a net railway operating income of $136,518,488, at the rate of 6.23 per cent, as compared with 4.76 per cent for the corresponding period in 1928. Operating revenues of the Class I railroads for the three months totaled $739,808,588, an increase of 6.1 per cent, while operating expenses totaled $546,317,709, an increase of 1.2 per cent. For March they had a net railway operating income of $50,403,826 compared with $43,015,650 in March, 1928.

In the Southern District for the first three months the net railway operating income was $34,738,691, or 4.08 per cent, as compared with 3.99 per cent for the same period in 1928. Operating revenues for the three months amounted to $197,613,842, a decrease of three-tenths of one per cent, while operating expenses totaled $147,385,156, a decrease of 1.7 per cent. The net in March amounted to $12,042,972, while in the same month in 1928 it was $14,506,397.

Class 1 railroads in the Western district for the first three months had a net of $88,284,701, at the rate of 4.94 per cent. For the three months in 1928. they had a net of $81,157,735 at the rate of 4.60 per cent. Operating revenues for three months amounted to $542,246,817, an increase of 3.1 per cent, while operating expenses totaled $403,059,259, an increase of 1.5 per cent. For March, the net in the Western district amounted to $35,019,678. The net of the same roads in March, 1928, totaled $33,353,990.

CLASS I RAILROADS—UNITED STATES

	Month of March 1929	1928
Total operating revenues	$516,973,409	$506,098,451
Total operating expenses	377,279,236	373,921,554
Taxes	32,511,005	31,502,333
Net railway operating income	97,466,476	90,876,037
Operating ratio—per cent	72.98	73.88
Rate of return on property invest...	5.00%	4.73%
	Three months ended March 31	
Total operating revenues	$1,479,669,257	$1,421,707,254
Total operating expenses	1,096,762,124	1,087,007,038
Taxes	95,254,240	89,351,367
Net railway operating income	259,541,880	217,370,419
Operating ratio—per cent	74.12	76.46
Rate of return on property invest...	5.37%	4.57%

Traffic

The Central Western Shippers' Advisory Board will hold its seventeenth regular meeting at Kearney, Neb., on June 20.

Joint operation of all rail facilities at Los Angeles (Cal.) harbor under the direction of the Harbor Belt Line Railway will be inaugurated on June 1.

The Pennsylvania has put in operation gas-electric rail motor cars on two branches which join the main line at Altoona; the Petersburg branch, 44 miles, two trains each way, and the Morrison Cove branch, 27 miles, one train each way. On the Petersburg branch, this change will do away with steam passenger trains entirely. The gas-electric cars in some cases will haul a trailer.

The Erie Limited

The Erie announces that its new train between New York and Chicago, the "Erie Limited," which begins operation on June 2, is to have not only the regular sleeping and dining cars through (including an observation sleeper with parlor lounge) but in addition a sleeper between Youngstown and Chicago; a sleeper between Akron and Chicago (eastbound on No. 8); a parlor car between New York and Buffalo; individual seat coaches between New York and Chicago and between New York and Buffalo, and a lounge car for coach passengers between New York and Chicago. The regular fare between New York and Chicago, by the Erie, is $30.70 and the extra fare, $3.60, will be charged only between New York, Paterson, (N. J.) and Chicago; no extra fare between other points.

Quebec Seeks Reduced Rates

Asking that Quebec be included in the select territory under the provisions of the Maritime Freight Rates Act, and that Quebec be substituted for Diamond Junction as the western boundary of that select territory, a deputation from the city of Quebec last week interviewed the Dominion government at Ottawa.

The Maritime Freight Rates Act provides for a 20 per cent freight rate reduction on freight moving in the select territory, the western boundary of which is Diamond Junction (near the south terminus of the Quebec Bridge), and provides that railways that prove they have lost money by carrying goods at the reduced rate shall be reimbursed by the government. The Act was really designed to assist manufacturers and wholesalers in the Maritime provinces in competing with Ontario and Quebec.

C. G. W. Development Campaign

Banquets, during the course of which gold and silver medals were awarded to boys and girls for outstanding work in agriculture and home economics, were a feature of the seventh annual development campaign of the Chicago Great Western which was completed on April 1. During the four winter months this company held 75 to 100 or more regular and special meetings which gave patrons along the line an opportunity to meet representatives of the railroad and talk over transportation, agricultural and other problems. The campaign this past winter was conducted in co-operation with the Iowa State College, the railroad furnishing a train of three cars and the college an agricultural exhibit, while both supplied several speakers. About 600 public meetings have been held on this line since the development department was organized in December, 1920, and between 10,000 and 20,000 people attend the meetings each year.

The railroad has three passenger coaches especially fitted for this work. One car is an exhibit car used to illustrate some important problems in agriculture. A second car is a lecture car, containing a screen and stereopticon, while a third car is a combined lecture and business car. A lighting plant has been installed in the train to light the cars and furnish current for the stereopticon.

Congressional Interference With Rate-Making Opposed

Resolutions regarding Congressional interference with rate regulation by the Interstate Commerce Commission as unwise and contrary to sound public policy were adopted by the Chamber of Commerce of the United States at the conclusion of its annual meeting in Washington on May 3. Without mentioning the Hoch-Smith resolution by name the resolutions referred to "requirements for such elaborate investigations as unduly postpone rate adjustments which the commission could otherwise make more promptly in accordance with the procedure and law already established."

The resolutions reported by the resolutions committee had their origin in those recommended by the Chamber's committee on railroads which were approved at a round-table conference on the Hoch-Smith resolution on April 30 but which were further modified as to some of the language. After expressing approval of the action of Congress in delegating to an expert commission the function of regulating railway rates the resolutions continued:

"Congress having created such a body, we regard it as unwise and contrary to sound public policy for Congress to fix rates itself.... The Commission should be permitted to continue to regulate rates in accordance with its own expert knowledge and judgment. . . It is a long established principle of rate-making that consideration should be given to the condition of the various industries, including agriculture, so that rates may be fair and not discriminatory. This principle should be so applied as to give reasonable stability in the rate structure, since constant change and uncertainty would necessarily retard development. . ."

Paul Shoup, president of the Southern Pacific, was re-elected vice-president of the Chamber for the western division. A. W. Robertson, chairman of the board of the Westinghouse Electric & Manufacturing Company was elected a director for the transportation and communication division.

Qualifications for Practice Before I. C. C.

The Interstate Commerce Commission has announced its intention of maintaining a register, commencing July 1, in which will be entered the names of all persons entitled to practice before the commission. Additions to the commission's rules of practice have been adopted by which corporations and firms will not be admitted or recognized but the following classes of persons whom the commission finds, upon consideration of their applications, to be of good moral character and to possess the requisite qualifications to represent others may be admitted to practice before the commission:

"(a) Attorneys at law who are admitted to practice before the Supreme Court of the United States or the highest court of any state or territory or the District of Columbia.

"(b) Any person not an attorney at law who is a citizen or resident of the United States and who shall file proof to the satisfaction of the commission that he is possessed of the necessary legal and technical qualifications to enable him to render valuable service before the commission and is otherwise competent to advise and assist in the presentation of matters before the commission."

Any individual or member of a partnership which is a party to any proceeding may appear for himself or such partnership upon adequate identification, and a corporation or association may be represented by a bona fide officer upon permission granted, in the discretion of the presiding commissioner or examiner.

An application under oath for admission to practice shall be addressed to the commission, Washington, D. C., and must state the name, residence address, and business address of the applicant, and the time and place of his admission to the bar, or the nature of his qualifications. Such application shall also state whether the applicant has ever been suspended or disbarred as an attorney in any court, or his right to practice suspended or revoked in any jurisdiction. Such applications shall be accompanied by a certificate of the clerk of the court in which the applicant is admitted to practice to the effect that he has been so admitted and is in good standing; or a certificate by three or more registered practitioners to the effect that the applicant possesses all the requisite qualifications under this rule, and moving and recommending that he be admitted to practice under this rule.

Equipment and Supplies

Locomotives

GRAND TRUNK WESTERN—See Canadian National.

THE TENNESSEE CENTRAL is inquiring for four 2-8-8-2 type locomotives.

THE LITCHFIELD & MADISON is inquiring for from one to three 2-8-2 type locomotives.

THE CHICAGO & ILLINOIS MIDLAND has ordered two 2-10-2 type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of March 23.

THE ELGIN, JOLIET & EASTERN has ordered six 2-8-2 type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of March 30.

THE CANADIAN NATIONAL has ordered 12 eight-wheel switching locomotives and three 4-6-2 type locomotives from the Baldwin Locomotive Works. These locomotives are for service on the Grand Trunk Western. Inquiry for this equipment was reported in the *Railway Age* of April 27.

Freight Cars

THE CHICAGO & ALTON is inquiring for prices on the repair of 130 box cars of 40 tons' capacity.

THE PENNSYLVANIA has ordered from its Altoona works 1000 class X-29 all-steel wood-lined box cars, of 50 tons' capacity.

THE INSPIRATION CONSOLIDATED COPPER COMPANY is inquiring for four air dump cars of 30 cu. yd. and 50 tons' capacity.

THE NEW CORNELIA COPPER COMPANY has ordered 50 ore cars from the Koppel Industrial Car & Equipment Company. Inquiry for this equipment was reported in the *Railway Age* of April 6.

THE UNION PACIFIC has ordered 500 automobile cars from the Ralston Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 20.

THE NORTHERN PACIFIC has ordered 200 flat cars from the Pressed Steel Car Company, and will build 100 stock cars in its own shops. Inquiry for this equipment was reported in the *Railway Age* of March 16.

THE NORTH WESTERN REFRIGERATOR COMPANY has ordered 500 refrigerator cars from the American Car & Foundry Company, in addition to 150 ordered from this company in April. Inquiry for this equipment was reported in the *Railway Age* of May 4.

Passenger Cars

THE ATLANTA & WEST POINT and associated roads are inquiring for eight steel mail and baggage cars 70 ft. long.

THE SOUTHERN PACIFIC has ordered 12 gas electric rail motor cars from the Pullman Car & Manufacturing Corporation, 7 from the J. G. Brill Company and 2 from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of March 30.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 70 coaches, 3 multiple unit motor cars and 6 multiple unit trailer cars. In the *Railway Age* of March 16 it was reported that the company had authorized the purchase of this equipment.

Signaling

THE UNION PACIFIC has ordered from the General Railway Signal Company material for an electric interlocking for Tower A, Omaha, Nebr.; 119 working levers.

THE UNION PACIFIC plans the installation of automatic block signals during 1929 between Ellis, Kan., and Limon, Colo., 148 miles, and between Hastings, Neb., and Marysville, Kan., 114 miles, on the St. Joseph & Grand Island.

THE DENVER & RIO GRANDE WESTERN has contracted with the General Railway Signal Company for the installation of automatic block signals on its line between Palisade, Colo., and Maxwell, Utah, 184 miles. Color-light signals will be used.

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company, a four-lever dispatching machine to be installed at Glenn, Ohio. This machine is to control the signals and one switch at a connection with the Cleveland, Cincinnati, Chicago & St. Louis.

THE PENNSYLVANIA has contracted with the Union Switch & Signal Company for the installation of an electro-pneumatic car retarder system in its eastbound yard at Pitcairn, Pa., 15 miles east of Pittsburgh. There will be 28 retarders, 34 skates and 33 switch movements.

THE PENNSYLVANIA plans the immediate installation of additional position-light automatic block signals on the Toledo and St. Louis divisions, involving an expenditure of $1,000,000. About 60 miles of double track and 40 miles of single track will be equipped between Detroit, Mich., and Mansfield, Ohio, on the Toledo division. On the St. Louis division the following sections will be equipped: Ben Davis, Ind., to Harmony, 43 miles; Brownstown, Ill., to Smithboro, 23 miles, and Farrington, Ill., to Casey, 28 miles.

Supply Trade

The Ramapo Ajax Corporation, New York, has moved its office to 230 Park avenue, New York City.

Midgley & Borrowdale, Chicago have moved their sales office from the McCormick building to the Willoughby Tower, Madison street and Michigan avenue.

Grant B. Shipley, consulting engineer and president of the **Century Wood Preserving Company,** has moved his office to 3010 Koppers building, Pittsburgh, Pa.

To provide facilities for its increased trade in the east central states, **Cutler-Hammer, Inc.,** Milwaukee, Wis., has established a warehouse at Cleveland, Ohio.

C. A. Dunn, formerly sales manager of the Prime Manufacturing Company, has resigned his position as railroad sales manager of the Hutto Engineering Company to accept the position of general manager of the **Appleton Steel Tube Company,** Appleton, Wis.

D. S. Ellis, formerly assistant engineer of motive power, New York Central Lines, has joined the railroad division of the **Worthington Pump & Machinery Corporation,** as eastern district sales manager, with headquarters at the Harrison works, Harrison, N. J.

Joseph L. Block, Frank R. Meyer, Jr., and **Albert C. Roeth,** assistant vice presidents of the **Inland Steel Company,** have been elected vice-presidents. **Charles R. Robinson,** vice-president in charge of railroad sales, has been elected a member of the board of directors.

At a recent meeting of the board of directors of **E. F. Houghton & Company,** Philadelphia, Pa., **Louis E. Murphy** was elected president, to succeed **Charles E. Carpenter,** deceased; **A. E. Carpenter** was elected first vice-president and treasurer, and **George W. Pressell** was elected second vice-president and secretary.

The Rail Joint Company, which has been acquired by **Poor & Company** through the purchase of 76 per cent of the stock, will continue to be operated as a separate and independent company, as in the past, with **V. C. Armstrong** as president. At the meeting of the directors of The Rail Joint Company, held in New York on April 29, **Fred A. Poor** was elected chairman of the board of that company.

At a recent meeting of the board of directors of the **Timken Roller Bearing Company,** Canton, Ohio, **Marcus T. Lathrop,** vice-president and general manager in charge of operation and sales was elected president of the company, succeeding **H. H. Timken,** who

became chairman of the board; **J. W. Spray,** vice-president and general sales manager was elected a director; **A. C. Ernst,** Cleveland, Ohio, was elected a director and all the previous members of the board of directors were re-elected.

Frederick A. Stevenson, assistant vice-president of the **American Car & Foundry Company,** has been elected a director and vice-president in charge of operations with headquarters at New York. He succeeds, as vice-president, **William C. Dickerman,** who was elected president of the American Locomotive Company. Mr. Stevenson's entire business life has been passed in the service of the American Car & Foundry Company. He was born at Detroit, Mich., on April 6, 1880, and after being graduated from high school, he immediately entered the service of the American Car & Foundry Company as a mechanic; later he was transferred to the Berwick, Pa., plant, where he remained until 1907, when he returned to Detroit as master mechanic. In 1916, Mr. Stevenson was

Frederick A. Stevenson

appointed assistant general manager, with supervision of the Detroit plant, where large munitions production was being carried on for the Allied Armies. After America entered the war, all the facilities of the American Car & Foundry Company's Detroit and Depew plants were assigned for the manufacture of munitions for the American forces, and Mr. Stevenson was placed in charge of both activities. In August, 1919, he was appointed assistant vice-president and transferred to New York, to direct manufacturing at all car plants, foundries and rolling mills operated by the American Car & Foundry Company, which position he held until his election as a director and vice-president in charge of operations. Mr. Stevenson is a director also of a number of industrial organizations, including the American Aeronautical Corporation, and the American Car & Foundry Motors Company.

Obituary

John T. Logan, president of the National Lumber & Creosoting Company, Texarkana, Ark., who died on April 12, in St. Louis, Mo., was born in Mansfield, La., on December 1, 1865. He entered railway service as an operator at the railway station in his home town and from 1885 to 1896 was in the employ of one of the then large express companies, serving as messenger, route agent and auditor, with headquarters at Galveston,

John T. Logan

Tex., Fort Worth, Dallas, San Antonio and El Paso. From 1896 to 1903 he was employed by various railways as traffic manager, and was also in charge of construction work at Juarez, Mexico, El Paso, Tex., and Douglas, Ariz. In 1903 he moved to Texarkana, Ark., and entered the wood preserving industry as vice-president of the National Lumber & Creosoting Company. Three months later he was elected president, which position he held until his death.

Theodore Walter Newburn, district engineer of the Westinghouse Air Brake Company at Washington, D. C., died suddenly on April 26, at the age of 53, while on a train enroute to the Air Brake Association Convention, at Chi-

Theodore Walter Newburn

cago. After being graduated as a mechanical engineer from Purdue University in 1902, Mr. Newburn entered the employ of the Westinghouse Air Brake Company, and served as an inspector and as a mechanical expert until 1914, when he was made assistant district engineer at Pittsburgh. Later he was transferred to Washington, D. C., and promoted to district engineer, which position he held at the time of his death.

Construction

BALTIMORE & OHIO.—A contract has been awarded to the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., for the construction of water treating plants at Foster, W. Va., and Jacksonburg. Bids have been received for the construction of a water treating plant at Zanesville, Ohio.

CANADIAN PACIFIC.—This company will receive bids until May 15 for the construction of freight sheds at Vancouver, B. C., at an estimated cost of $100,000.

CHESAPEAKE & OHIO.—This company has awarded a contract to Haly, Chisholm & Morris, Charlottesville, Va., for the construction of a third track on its lines from Big Sandy Junction to Pike Crossing, near Catlettsburg, Ky., at an approximate expenditure of $300,000.

CLEVELAND UNION TERMINALS.—A contract has been awarded to the Hecker-Moon Company, Cleveland, Ohio, for the construction of six reinforced concrete train platforms as a part of the union station project at Cleveland, at a cost of about $100,000. The platforms will be 20 ft. wide by 1,500 ft. long.

COOK COUNTY (ILL.).—The Cook County Commissioners expect to call for bids within the near future for the construction of a bridge and viaduct, 3,500 ft. in length, over the Calumet river and a number of railroad tracks at One-hundred Forty-third street and Burnham avenue, Chicago. The cost, about $778,000, will be borne by the county, the Indiana Harbor Belt, the Baltimore & Ohio, and the Michigan Central.

ERIE-DELAWARE, LACKAWANNA & WESTERN.—These roads plan the joint elimination of a highway grade crossing in Corning, N. Y. The estimated cost of the work is $160,000, exclusive of land and property damages.

FORT WORTH & DENVER CITY.—This company plans, as soon as surveys and estimates can be completed, to apply to the Interstate Commerce Commission for authority to construct 110 miles of new line to cost between $3,500,000 and $4,000,000, to serve an area producing wheat, cotton, sorghum, grains and live stock in Wheeler and Gray counties in Texas. As now projected, the branch will leave the main line at Childress, Tex., and will run north and northeast through Wellington, Tex., and Shamrock to Pampa. The line will cross the Missouri-Kansas-Texas at Wellington, the Chicago, Rock Island & Gulf at Shamrock and the Atchison, Topeka & Santa Fe at Pampa.

KANSAS CITY SOUTHERN.—The Arkansas State Highway Commission will open bids at Little Rock, Ark., on May 15, for the construction of a 126-ft. reinforced concrete deck-girder viaduct over the tracks of this company on State Highway No. 71 in Polk county, Ark. The work includes the placing of 523 lin. ft. of earth embankment.

KENTUCKY & INDIANA TERMINAL.—Following an agreement between representatives of this railroad and the Louisville (Ky.) Board of Public Works it was announced that bids will be taken to enable work to start within 90 days on the elimination of grade crossings by the elevation of tracks along Thirty-first street between Market street and Garland avenue at Louisville. The cost of the project is estimated at $1,000,000.

MISSOURI PACIFIC.—Plans have been announced for the raising of track and the construction of flood protection works at two points on the Central Kansas division which will involve an expenditure of about $157,210. The project will include raising tracks, the application of rock ballast and anchoring track at strategic points to permit continuous operation of trains through periods of high water. This work will be undertaken between Ottawa, Kan., and Lomax, 14 miles in the overflow area of the Marais Des Cygnes river and One Hundred Ten Mile and Salt creeks, and between Bridgeport, Kan., and Marquette, 15 miles.

NEW YORK, NEW HAVEN & HARTFORD.—Two contracts have been awarded to Tredennick-Billings Company, Boston, Mass., one for office extensions to warehouses 10 and 11 in connection with the fruit terminal facilities in Fargo street, Boston, to cost about $150,000, and the second for new platform facilities and concrete driveways for the same terminal at an expenditure of about $50,000. A contract also has been given to C. W. Blakeslee & Sons, New Haven, Conn., for the reconstruction of a bridge to permit the widening of Sound Beach avenue, in Greenwich, Conn. This has been estimated to cost $100,000.

NEW YORK CENTRAL.—This company plans the elimination of a grade crossing on its lines at the Mansion street crossing in Coxsackie, N. Y. The project has been estimated to cost $172,900.

NEW YORK CENTRAL.—Contracts have been awarded by this company as follows: To William M. Ballard, Inc., Syracuse, N. Y., for additions and alterations to engine terminal facilities at Rensselaer, N. Y.; to the Culsher Contracting Company, New York, for grading work on West End avenue, New York, between West Sixty-fifth and Sixty-sixth streets; to the General Electric Supply Corporation, New York, for the removal and reinstallation of electric equipment at Forty-third street, New York; to the Thompson-Starrett Company, Inc., New York, for raising buildings and clearing the site between Park and Lexington avenues at Fiftieth street, and remodeling of a boiler plant at Forty-third street; to Edwards & Flood, Inc., Brooklyn, for the elimination of a grade crossing in Gray Oaks, Yonkers, N. Y.

NICKEL PLATE DEVELOPMENT COMPANY.—A contract for the construction of a one-story brick and steel freight station, with outside dimensions of 221 ft. by 38 ft., on East Seventy-fifth street, Cleveland, Ohio, has been let to R. S. Ursprung, Berea, Ohio, at a cost of about $150,000.

PENNSYLVANIA.—This company has awarded a contract to Booth & Flynn Co., Pittsburgh, Pa., for the construction of trackage and paving work on Pike street, adjacent to its new fruit and vegetable terminal, in Pittsburgh. The project has been estimated to cost $60,000. A contract has been awarded to the W. F. Trumble & Sons Company for the construction of a new passenger station on its lines at Sewickley, Pa., at an estimated cost of $100,000.

READING.—This company plans the construction of a new modern passenger station at Trenton Junction, N. J. There will be two buildings connected by a tunnel to care for both east bound and westbound traffic. They will be constructed in Colonial style of red brick with terra cotta ornamentations and slate roofs. The main station will be placed on the south side of the tracks. It will be 85 ft. long and 28 ft. wide. The lower floor will be used for waiting rooms, ticket offices and a baggage and parcel room. The second floor will be used for offices of the Reading. The building on the north side of the tracks will contain a waiting room for passengers for westbound trains. Provisions are being made for four main line tracks and a fifth for use of the gas-electric cars connecting with Trenton. The two platforms will be connected by a tunnel under the tracks. It is expected that the work will be started at an early date.

Work is Progressing on New Jersey City Terminal

Work is progressing rapidly on the first unit of the Pennsylvania's new $50,000,000 ship-rail terminal at Jersey City, N. J., since the recent passage by the Jersey City Commission of three ordinances allowing for the "dead-ending" of a number of streets, and exchanges in property between the city and the railroad. Agreements have already been entered by the Pennsylvania and the city by which the railway has taken over the city's Bergen street pier in exchange for the Pennsylvania's Pier B at the foot of Grand street. Pennsylvania engineers now are at work on plans for three new 1,000 ft. piers which will be constructed immediately, and also for a new 12-story warehouse, which will cover two blocks and which is to be constructed adjacent to the piers. It is expected that the railroad will be in a position to call for bids on this project within the next two or three weeks.

The terminal will be located between the present Erie Railroad terminal and the Morris Canal Basin in Jersey City, and with the terminal developments by the city, aside from the plans made by the Pennsylvania, will be directly served by trunk line railroads including the Pennsylvania, Jersey Central, Lehigh Valley, Erie, Delaware, Lackawanna & Western and the West Shore. The Delaware, Lackawanna & Western at the present time has under construction a 1,000 ft. pier, which when completed will be a part of the terminal project.

Financial

I. C. C. Valuation Not Basis for Rates

ATLANTA, BIRMINGHAM & COAST.—*Investment Account.*—Assistant Director C. V. Burnside of the Interstate Commerce Commission's Bureau of Finance has recommended in a proposed report a finding by the commission that this company may include in its balance sheet statement of investment in road and equipment as of January 1, 1927, an amount not exceeding $9,261,043, as representing the cost of acquiring the property of the Atlanta, Birmingham & Atlantic, whereas the company had sought to include in the account $29,471,859, based upon the commission's valuation of the railroad as of 1914, with additions and adjustments in recognition of changes in property between the date of valuation and January 1, 1927. The Bureau of Accounts objected to this proposal and proposed instead the sum of $5,180,344 par value of the preferred stock issued by the new company upon reorganization, and $4,080,699, the expenditure assumed by the Atlantic Coast Line in consideration of the delivery of 150,000 shares of no-par stock of the new company. The order of the commission prescribing the basis of the accounting to be followed was set aside by the district court for the northern district of Georgia pending a hearing before the commission on a supplemental application of the company for such construction of the order as would support its proposed accounting. At the hearing the company asserted its right to include $25,744,863 in its accounts as investment, under the commission's accounting classification. The report says that the Atlantic Coast Line, through a subsidiary, acquired the properties by the payment of $9,261,043 and that there is no evidence of lack of parity between the cash value of the consideration given and that of the property received, considered as that of a going concern. As to the valuation it says the valuation report "endeavored to make it plain that its valuation had no relation to the worth of the properties, but was merely a sum upon which the carrier was entitled to earn a fair return. That it could, as a separate entity, earn such a return, is more than doubtful; but the use of that valuation, as a part of the value of railroad property in the country, or in that section, as a general basis for rates is merely a recognition of the necessity of maintaining in operation properties upon which a large population depends for transportation service.

CANADA SOUTHERN.—*Abandonment.*—This company and its wholly owned subsidiary, the Canada Southern Bridge Company, have been authorized by the Interstate Commerce Commission to abandon its Grosse Isle branch extending from a connection with the Michigan Central at Trenton, Mich., across the Detroit river to Grosse Isle, a distance

of 2.29 miles. An accompanying order permits the Michigan Central, lessee of the line, to abandon its operation.

CENTRAL OF GEORGIA.—*Bonds.*—Kuhn Loeb & Co. have offered $10,000,000 of refunding and general mortgage 5 per cent bonds, Series C, of this company at 98.25 to yield 5.12 per cent. The issue will mature in 1959.

CHESAPEAKE & OHIO. — *Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $5,025,000 of 4½ per cent equipment trust certificates, to be sold on competitive bids.

CHICAGO, BURLINGTON & QUINCY.—*New Directors Elected.*—At the annual meeting of the stockholders at Chicago on May 1, Charles F. Glore, a member of the firm of Field, Glore & Co., Chicago, was elected a director to succeed Edward M. Shelton, assistant general counsel of the railroad. Alexander Legge, president of the International Harvester Company, Chicago, was elected a director to replace Horace H. Holcomb, vice-president of the Burlington. George T. Slade of New York, a director of the Northern Pacific and the Lehigh Valley, was elected to succeed Charles E. Perkins of Burlington, Iowa.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $8,370,000 of 5 per cent equipment trust certificates, to be sold on competitive bids.

DETROIT & MACKINAC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a portion of its Hillman branch extending from Emerson, Mich., to Hillman, 12.9 miles.

DULUTH, MISSABE & NORTHERN.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $7,568,281, as compared with net income of $6,345,518 in 1927. Selected items from the income statement follow:

DULUTH, MISSABE & NORTHERN

	1928	1927	Increase or Decrease
RAILWAY OPERATING REVENUES	17,417,640	15,835,484	1,582,156
Maintenance of way	1,687,972	2,022,237	—334,265
Maintenance of equipment	2,089,886	2,378,820	—288,935
Transportation	3,130,158	3,103,603	26,555
TOTAL OPERATING EXPENSES	7,206,781	7,858,242	—651,384
Operating ratio	41.38	49.62	—8.24
NET REVENUE FROM OPERATIONS	10,210,781	7,977,242	2,233,539
Railway tax accruals	2,206,859	1,904,710	302,149
Railway operating income	8,003,918	6,072,486	1,931,432
Equipment rents and Joint facility rents (net)	Cr.20,006	Dr. 54,989	74,995
NET RAILWAY OPERATING INCOME	8,023,924	6,017,496	2,006,427
GROSS INCOME	8,974,291	6,924,945	2,049,347
Rent for leased roads	209,109	207,021	2,088
Interest on funded debt	310,926	341,288	—30,363
TOTAL DEDUCTIONS FROM GROSS INCOME	1,406,010	579,427	826,584
NET INCOME	7,568,281	6,345,518	1,222,763

GRAND TRUNK WESTERN.—*Consolidation.*—Replying to a question raised in a Parliamentary committee hearing on the Canadian National's plans relative to this company, President Sir Henry Thornton of the C. N. R. said: "The Grand Trunk Western Railway is owned entirely by the Grand Trunk, now the Canadian National Railways. It consists of a number of subsidiary companies, I think thirteen in number. Those companies were controlled through stock ownership, and in some cases, leases, but preserved their separate corporate identity. It involves a great deal of accounting work. It was an awkward and cumbersome way to administer the affairs of the company and it prevented the Grand Trunk Western from making that showing which its financial performance merited; consequently, we thought it would be highly desirable to amalgamate all of these companies into one and reorganize the whole financial position of the company, so as to put the parent company in a position to realize upon and capitalize the very satisfactory financial showing which the Grand Trunk Western has made in the last few years, a showing that was, of course, largely to be charged to the tremendous impetus given in the peninsula of Michigan to the manufacture of automobiles. Therefore, that work was undertaken and petitions are now before the Interstate Commerce Commission, having been approved by the States of Michigan and Indiana, to bring about that consolidation. It makes no actual difference in the control of the Canadian National Railways over these properties, but it brings order out of chaos and produces a materially more efficient organization and a better financial structure."

ILLINOIS CENTRAL.—*Equipment Trust Certificates.*—An issue of $6,990,000 of 4½ per cent equipment trust certificates, Series B, of this company has been offered by bankers, maturing annually from 1930 to 1944, and priced to yield from 5.75 per cent for the first maturity to 4.9 per cent for the last maturities.

KANSAS CITY TERMINAL.—*Final Valuation.*—The Interstate Commerce Commission has issued a final valuation report finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of 1916, to be $38,323,000.

LEHIGH & NEW ENGLAND.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $836,127, as compared with net income of $1,081,183 in 1927. Selected items from the income statement follow:

LEHIGH & NEW ENGLAND

	1928	1927	Increase or Decrease
Average mileage operated	216.67	216.73	.06
RAILWAY OPERATING REVENUES	5,392,412	5,798,454	—406,042
Maintenance of way	644,686	641,674	3,012
Maintenance of equipment	1,122,030	1,230,010	107,980
Transportation	1,915,359	1,927,505	12,146
TOTAL OPERATING EXPENSES	3,955,210	4,037,225	82,015
Operating ratio	73.35	69.63	3.72
NET REVENUE FROM OPERATIONS	1,437,202	1,761,228	324,027
Railway tax accruals	184,851	249,416	64,565
Railway operating income	1,252,323	1,511,675	—259,351
Hire of freight cars—Cr.	82,243	13,579	68,664
Joint facility rents—Dr.	130,668	114,009	16,659
Non-operating income	142,188	85,568	56,620
GROSS INCOME	1,394,512	1,597,242	202,731
Interest on funded debt	392,431	360,188	32,244
TOTAL DEDUCTIONS FROM GROSS INCOME	558,385	516,060	42,325
NET INCOME	836,127	1,081,183	245,055

LOUISVILLE & NASHVILLE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its Halsey branch, 1.4 miles, at Keswick, Ky.

LOUISVILLE & NASHVILLE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $11,426,000 of first and refunding mortgage 4½ per cent bonds, Series C, in partial reimbursement for capital expenditures. The bonds will be held in the treasury pending the time when favorable market conditions make a sale desirable.

MICHIGAN CENTRAL.—*Abandonment.*—See Canada Southern.

MISSOURI-ILLINOIS.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $3,500,000 of first mortgage 5 per cent bonds, Series A, to be sold at not less than 95 and the proceeds used in payment for the purchase of the capital stock of the Mississippi River & Bonne Terre. The bonds will mature in 1959 and arrangements have been made to sell them to Dillon, Read & Co., at the stipulated price, which will make the annual cost to the railroad 5.336 per cent.

NEW YORK CENTRAL.—*Unification Proceeding.*—Counsel for the protective committee of the minority stockholders of the Cleveland, Cincinnati, Chicago & St. Louis and for some of the short lines connecting with the New York Central lines, have filed with the Interstate Commerce Commission replies asking it to deny the petition of the New York Central for a final order approving its lease of the Michigan Central and Big Four. Counsel for the protective committee renew their objection to the terms and conditions of the proposed lease and counsel for the Fonda, Johnstown & Gloversville and the Federal Valley take the position that the Central has not yet fully complied with the conditions imposed by the commission that it make efforts to agree with several connecting short lines to ac-

quire their property on the basis of their commercial value. The Fonda says that the New York Central has not made a bona fide offer to acquire all of its steam railroad property and asks that the commission withhold an order pending consideration of its request that its electric railway properties be included. It also accuses the Central of having made "sham offers", such as the sum of one dollar in the case of the Boyne City, Gaylord & Alpena and the Chicago, Attica & Southern and of then offering to arbitrate and asking the commission for a final order.

RUTLAND.—*Annual Report*—The annual report of this company for 1928 shows net income after interest and other charges of $592,096, as compared with net income of $63,344 in 1927. Selected items from the income statement follow:

	Rutland 1928	1927	Increase or Decrease
Average Mileage operated	413.01	413.01	.....
Railway Operating Revenues	6,626,282	6,197,106	429,176
Maintenance of way	1,312,382	1,483,601	—171,219
Maintenance of Equipment	1,221,136	1,209,275	11,861
Transportation	2,472,798	2,542,984	—70,186
Total Operating Expenses	5,361,875	5,556,639	—194,765
Operating ratio	80.92	89.66	—8.74
Net Revenue from Operations	1,264,408	640,467	623,941
Railway tax accruals	336,667	260,570	76,098
Railway operating income	927,690	379,843	547,847
Equipment rents—Net Dr.	51,098	7,233	43,865
Joint facility rents—Net Cr.	64,293	62,491	1,799
Net Railway Operating Income	940,883	435,101	505,782
Non-operating income	106,502	105,566	936
Gross Income	1,047,385	540,667	506,718
Rent for leased roads	19,000	19,000	.....
Interest on funded debt	421,420	448,201	—26,781
Total Deductions from Gross Income	455,289	477,323	—22,033
Net Income	592,096	63,344	528,751
Disposition of net income— Dividends on preferred capital stock, 1 per cent	89,623	.....	.....
Surplus for year carried to profit and loss	502,473	63,344	439,128

SACRAMENTO NORTHERN.—*Construction Authorized.*—The Interstate Commerce Commission has authorized the construction, by this road, of a 7.5 mile branch from Vacaville Junction to a connection with the San Francisco-Sacramento at Creed, Cal.

SAN FRANCISCO-SACRAMENTO. — *Construction Authorized.* — The Interstate Commerce Commission has authorized this road to construct an 0.88 mile extension to the Pittsburg branch of its Oakland-Sacramento, Cal., line.

SOUTHERN PACIFIC. — *Acquisition of Control.*—See Western Pacific.

SOUTHERN. — *Bonds.* — The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $5,250,000 of development and general mortgage 4 per cent bonds, Series A, to provide for the redemption of a similar amount of first mortgage bonds of the South Carolina & Georgia, a leased line. It is not the purpose to sell these bonds at the present market, but, when and if issued, they will bear interest at the rate of 4 per cent and will mature in 1956.

WESTERN MARYLAND.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $2,375,185, as compared with net income in 1927 of $3,275,078. Selected items from the income statement follow:

	Western Maryland 1928	1927	Increase or Decrease
Average mileage operated	862.14	804.44	57.70
Railway Operating Revenues	18,592,557	21,866,171	—3,273,613
Maintenance of way	2,859,265	3,289,672	—430,407
Maintenance of equipment	3,653,259	4,552,230	—898,971
Transportation	5,040,077	6,076,838	—1,036,761
Total Operating Expenses	12,676,171	14,993,312	—2,317,141
Operating ratio	68.18	68.57	.39
Net Revenue from Operations	5,916,386	6,872,858	—956,472
Railway tax accruals	983,478	1,180,026	—196,548
Railway operating income	4,931,204	5,691,734	—760,530
Hire of equipment—Net	504,720	632,743	—128,023
Joint facility rents—Dr.	185,304	192,884	—7,580
Net Railway Operating Income	5,250,619	6,131,593	—880,974
Non-operating income	144,236	207,656	—63,420
Gross Income	5,394,855	6,339,249	—944,394
Rent for leased roads	89,130	85,130	4,000
Interest on funded debt	2,605,268	2,590,931	14,336
Total Deductions from Gross Income	3,019,670	3,064,171	—44,501
Net Income	2,375,185	3,275,078	—899,892

WESTERN PACIFIC.—*Authority for Proposed Acquisition and Construction Denied.*—The Interstate Commerce Commission has denied this company authority to acquire control of the Union Belt Railway of Oakland, Cal., and to construct a 1.27 mile extension to connect with the Union Belt in Oakland and an 0.5 mile extension to connect the Alameda Belt with the Union Belt. The denial of the application is without prejudice to renewal of that part which sought authority to construct the Alameda Belt connection and the record of the proceedings is held open for further testimony relating to the application of the Southern Pacific and the Central Pacific for authority to acquire control of the Union Belt.

Average Prices of Stocks and of Bonds

	May 7	Last week	Last year
Average price of 20 representative railway stocks	130.96	131.45	127.55
Average price of 20 representative railway bonds	91.64	91.70	96.35

Officers

Executive

Charles J. Geyer, who has been appointed assistant to the vice-president in charge of operation of the Chesapeake & Ohio, with headquarters at Richmond, Va., was born on April 6, 1889, in Zanesville, O. He was educated in the public and high schools and at Marshall College, Huntington, W. Va. Mr. Geyer began his railroad career by working during his summer vacations with the Chesapeake & Ohio and the Grand Trunk Pacific (Canadian National). In 1910 he was appointed rodman for the Chesapeake & Ohio, since when he has been successively instrumentman; resident engineer; assistant engineer in the maintenance of way department; assistant engineer in charge of field survey; division engineer of the Richmond division, and assistant superintendent of maintenance of way. In October, 1926, Mr. Geyer was appointed engineer maintenance of way at Richmond, serving in that position until April 15, at which time he was appointed assistant to the vice-president.

Charles J. Geyer

Operating

R. C. Parsons has been appointed assistant superintendent of transportation of the Louisville & Nashville, with headquarters at Louisville, Ky.

C. J. Brich, acting superintendent of the Duluth, Missabe & Northern, has been promoted to superintendent, with headquarters as before at Proctor, Minn.

Dr. Alson R. Kilgore, division surgeon on the Western Pacific, has been promoted to chief surgeon, with headquarters as before at San Francisco, Cal.

J. D. Fraine, superintendent on the British Columbia district of the Canadian Pacific at Revelstoke, B. C., has been transferred to the Kenora division, with headquarters at Kenora, Ont.

A. M. Stevenson has been appointed assistant superintendent of the Pensacola division of the Louisville & Nashville, succeeding **J. K. McCaskill** who has been assigned to other duties.

Edward H. Maggard, president and general manager of the Northwestern Pacific, with headquarters at San Francisco, Cal., has also been appointed general manager of the Southern Pacific Golden Gate Ferries, Ltd.

A. A. Dunphy, assistant superintendent of the Calgary (Alta.) terminals of the Canadian Pacific, has been transferred to Kenora, Ont. **D. Stephenson** has been appointed assistant superintendent of the Calgary terminals to succeed Mr. Dunphy.

A. F. McSweeney, chief clerk to the general manager of the Western region of the Pennsylvania at Chicago, has been promoted to superintendent of freight transportation of that region, with headquarters at Chicago. Immediately previous to his promotion, Mr. McSweeney was acting superintendent of freight transportation.

C. W. Shaw, superintendent of the St. Louis division of the Illinois Central, with headquarters at Carbondale, Ill., has at his own request been transferred to the East St. Louis Terminal division, with headquarters at East St. Louis, Ill. **F. E. Hatch,** superintendent at East St. Louis, has been transferred to Carbondale to replace Mr. Shaw. **J. C. Phipps,** conductor on the New Orleans division, has been promoted to assistant trainmaster on that division, with headquarters at Baton Rouge, La.

Edward H. Friberg, trainmaster on the Northern Pacific at Yakima, Wash., has been promoted to assistant to the general superintendent of the Western district, with headquarters at Seattle, Wash., succeeding **H. C. James,** who resigned on April 15. **Christopher T. Sponsel,** trainmaster at Dickinson, N. D., has been promoted to assistant to the general superintendent of the Eastern district, with headquarters at St. Paul, Minn., to succeed **Daniel M. Driscoll,** who has been promoted to superintendent of ore operations of the Lake Superior division, with headquarters at Superior East End, Wis. **Oscar Revling,** trainmaster at Pasco, Wash., has been transferred to Yakima to replace Mr. Friberg and **William M. Judson,** special assistant to the vice-president, has been appointed to succeed Mr. Revling as trainmaster at Pasco. **Henry Flanagan,** trainmaster at Forsyth, Mont., has been transferred to Dickinson, to succeed Mr. Sponsel. **Edwin H. Briley,** trainmaster at Dilworth, Minn., has been transferred to Forsyth to replace Mr. Flanagan, and **John E. Hogan,** trainmaster at Staples, Minn., has been transferred to Dilworth. **Robert G. Knight,** division roadmaster of the Tacoma division, with headquarters at Tacoma, Wash., has been appointed trainmaster-roadmaster on the Fargo division, with headquarters at East Grand Forks, Minn., succeeding **Frank W. Lyons** who has returned to train service and **Raymond W. Davis,** who has been transferred as roadmaster to the Yellowstone division at Glendive, Mont.

Traffic

P. C. McCormick, district freight agent for the Baltimore & Ohio at Chicago, has been promoted to assistant general freight agent at the same point, succeeding **J. W. Melone,** who, at his own request, has retired because of ill health.

P. J. McGrath, chief clerk to the mail and express traffic manager of the Southern Pacific, has been promoted to assistant mail and express traffic manager of the Pacific lines, with headquarters at San Francisco, Cal. **M. I. Goldsmith** and **W. R. McLean** have been appointed assistants to the mail and express traffic manager.

J. J. Mossman, division freight agent on the Wabash at Buffalo, N. Y., has been promoted to assistant general freight agent at that point. **R. W. Owens,** division freight agent at Kansas City, Mo., has been promoted to assistant general freight agent at the same place. **A. E. Ellenson** has been appointed perishable freight agent, with headquarters at Union Produce Terminal Building, Detroit, Mich.

Jerrold P. DeVaughn, who has been appointed general passenger agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., was born on April 14, 1881, in Wood County, W. Va. He entered the service of the Baltimore & Ohio in June, 1898, serving in various capacities in the freight station at Washington, Pa. He

Jerrold P. DeVaughn

was appointed ticket agent at the same station in March, 1904, and in May, 1905, he was transferred to Pittsburgh as assistant city ticket agent. He left the service of the Baltimore & Ohio in June, 1906, to become city passenger and ticket agent for the Buffalo, Rochester & Pittsburgh at Pittsburgh. He was transferred to Buffalo as division passenger agent in January, 1911, continuing to serve in that capacity until his recent appointment as general passenger agent at Rochester, N. Y., which became effective May 1,

Engineering, Maintenance of Way and Signaling

H. B. Post, circuit engineer in the office of the superintendent of telegraph and signals of the Western region of the Pennsylvania at Chicago, has been promoted to engineer of telegraph and signals in the New York Zone, with headquarters at New York.

William G. Ashworth, division roadmaster of the Dakota division of the Northern Pacific at Jamestown, N. D., has been transferred to the Tacoma division at Tacoma, Wash. **Carl H. Burgess,** district roadmaster on the Yellowstone division at Glendive, Mont., has been appointed division roadmaster of the Dakota division, succeeding Mr. Ashworth. **Marquis L. Hare,** roadmaster on the Seattle division at Lester, Wash., has been promoted to division roadmaster of the Yellowstone division at Glendive, replacing **Frank G. Cook,** who has been appointed trainmaster-roadmaster on the Rocky Mountain division, with headquarters at Wallace, Idaho.

Malcolm C. Cleveland, who has been appointed assistant chief engineer of the Lehigh Valley, with headquarters at New York, was born on March 26, 1877, at Wellesley Hills, Mass. He was educated at the Case School of Applied Science, Cleveland, O., and entered railroad service in June, 1901, as instrument man for the Baltimore & Ohio. The following year he was appointed assistant engineer of maintenance of way of the Indianapolis division of the Cleveland, Cincinnati, Chicago & St. Louis, and from April, 1904, to September, 1905, he served in the same capacity on the Cleveland division of

Malcolm C. Cleveland

that road. He was engineer of maintenance of way of the Peoria & Eastern from the latter date until June, 1907, at which time he became division engineer of the Michigan Central. From October, 1910, to August of the following year, Mr. Cleveland was special engineer on the staff of the vice-presi-

dent of the New York Central Lines, west of Buffalo. He next served as engineer of maintenance of way of the Chicago, Indiana & Southern (part of New York Central) and in May 1914, he was appointed valuation engineer of the Lehigh Valley. He was appointed principal assistant engineer of the same road in December, 1927, serving in that capacity until May 1, at which time he was appointed assistant chief engineer.

Purchases and Stores

E. J. Clark, storekeeper on the Chicago, Burlington & Quincy at Creston, Iowa, has been promoted to chief lumber inspector, with headquarters at Chicago, succeeding **F. S. Shinn,** who has resigned to accept service with another company. **R. A. Schuff,** storekeeper at McCook, Neb., has been transferred to Lincoln, Neb., succeeding **C. H. Grometer,** who has been transferred to Creston to replace Mr. Clark. **G. J. Simbleman** has been appointed storekeeper at McCook to succeed Mr. Schuff.

E. G. Wangelin has been appointed purchasing agent of the Illinois Terminal System, with headquarters at St. Louis, Mo., succeeding **H. J. Vance,** who retains the position of purchasing agent of the Chicago & Illinois Valley, with headquarters at Decatur, Ill.

Frank C. Riley, who has been promoted to assistant general storekeeper of the Chicago & Alton, with headquarters at Bloomington, Ill., was born at Aurora, Ill., on January 25, 1896. He attended St. Benedict College, Peru, Ill., from 1908 to 1912 and Columbia College, Dubuque, Iowa, from 1912 to 1914, then entering railway service on December 9, 1915, as a clerk on the Alton. In June, 1918, he was advanced to storekeeper

Frank C. Riley

and in 1920 he was appointed chief clerk to the general storekeeper. Mr. Riley was promoted to traveling storekeeper in 1927, where he remained until his further promotion to assistant general storekeeper.

Mechanical

Walter Harris has been appointed engineer of train lighting, heating and ventilating of the Southern Pacific with headquarters at West Oakland, Cal.

Luis V. Perez has been appointed master mechanic on the National of Mexico, with headquarters at Guadalajara, Jal.

H. M. Allan has been appointed division master mechanic in the Alberta district of the Canadian Pacific at Calgary, Alta., succeeding **M. W. Boucher,** who has been transferred to the British Columbia district at Revelstoke, B. C.

Special

Noel W. Smith, assistant to the general manager, Eastern region, of the Pennsylvania, has been appointed general superintendent of motor service, with headquarters at Philadelphia, Pa. Mr. Smith was born on December 25, 1869, at Williamsport, Pa. He was educated at the Williamsport High School and Lehigh University, entering railway service in July, 1887, as clerk for the Pennsylvania. In May, 1893, Mr. Smith was appointed rodman for the same road then serving successively as assistant supervisor, supervisor, assistant engineer and division engineer. In January, 1910, he was appointed superintendent of the Central division and in June, 1913, he served in the same capacity on the Middle division. He was promoted to the position of general superintendent of the Eastern Pennsylvania division in July,

Noel W. Smith

1918, and in March, 1920, he was appointed assistant general manager of the Central region, later serving in the same position for the Eastern region. Mr. Smith was furloughed in July, 1924, to perform work for the United States Government in connection with the Alaska Railroad, returning to the Pennsylvania as assistant to the general manager of the Eastern region in August, 1928, which position he held at the time of his recent appointment as general superintendent of motor service.

Obituary

J. J. McGraw, general freight and passenger agent of the Quincy, Omaha and Kansas City, died at his home in Kansas City, Mo., on May 8, after an extended illness.

Charles F. Morrison, general superintendent of the Sioux City Terminal Railway, with headquarters at Sioux City, Ia., died in that city of heart disease on May 5.

Harry Feather, master mechanic on the Louisville & Nashville, with headquarters at Corbin, Ky., since 1912, died at his home in that city on May 5, following an attack of pneumonia.

Watson B. Drew, retired superintendent of car service of the Maine Central, died at his home in Portland, Me., on April 29, after a short illness. Mr. Drew retired from the Maine Central in July, 1917.

B. P. Phillippe, fuel purchasing agent of the Pennsylvania with headquarters at Philadelphia, Pa., died on May 2, at his home in Strafford, Pa., after an illness which lasted several months. Mr. Phillippe was 58 years of age.

Walter D. Beymer, assistant comptroller of the Illinois Central, with headquarters, at Chicago, died at Lakeland, Fla., on March 17. Mr. Beymer had been in railway service for 43 years, 30 of which were with the Illinois Central. From June, 1903, to July, 1917, he was comptroller of the Central of Georgia and the Ocean Steamship Company of Savannah, with headquarters at Savannah, Ga. During federal control of the railroads he acted as federal auditor of the Illinois Central and from March, 1920, to May, 1922, he was comptroller of that railroad. He was then appointed assistant to the president and became assistant comptroller in April, 1923.

John L. Ferguson, former general passenger agent of the Chicago & North Western, who died at Los Angeles, Cal., on April 30, had been connected with railways for nearly 57 years, 51 years of which were spent in the service of the North Western. He was born on August 23, 1853, in Henry County, Ky., and entered railway service in 1868 as a telegraph operator on the St. Louis, Kansas City & Northern (now part of the Wabash). In 1875 Mr. Ferguson entered the service of the North Western as a ticket clerk at Milwaukee, Wis. Later he was advanced to city passenger agent at Milwaukee, was transferred to Chicago and in 1897 was promoted to assistant general passenger agent at the latter point. In November, 1917, he was further promoted to general passenger agent, with headquarters at Chicago, a position he held until his appointment as assistant to the passenger traffic manager in 1924. Mr. Ferguson retired from active duty in 1926.